EDUCATION

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FREDERICK RAND ROGERS, Editor

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EDUCATION

Vol. 60 APRIL, 1940 No. 8

INTRODUCTORY

THE articles appearing in this issue of EDUCATION are distinguished on several counts, but perhaps none more hazardous than on their objective: Several were written to be read by educators already familiar with school health programs based on certain definite administrative procedures. Consequently, other readers are likely to draw erroneous inferences, such as "The authors betray a certain lack of breadth — they are too preoccupied with a single aim." We might accept this imputation cheerfully, for the aim we strive to approach is health—physical fitness — physical vitality — without which, we frankly aver, all else in education or even life itself is just impossible. Our effort is to do one thing well — first. But, this done, we do move on to the achievement of other objectives, and with more assurance; for in improving health we have gone perhaps half the way already towards achieving any other goal a human being may desire. The wise man builds his social or spiritual house upon the physical rock of organic vitality . . .

Again, a virtue of the compositions which follow this one is their eminent practicability. These articles were written by men and women who have already accomplished what they write about; and who have succeeded so well, won so much for selves and pupils, and are so sure of the rectitude of their programs that they delight to pass them on. Readers who would review an earlier edition of this kind of symposium in education should look up the March, 1935, *Supplement* to the *Research Quarterly* called "Boston University Studies in Physical Education, 1935."

The editor also desires readers to avoid another erroneous impression — the assumption that any of our authors' local programs are one-sided, neglecting sports and skills, social and cultural aims and programs. For one will be safe in expecting to find, in the schools our authors serve, the completest of living programs to serve those other more ephemeral aims of physical education — social efficiency and culture. Indeed, whoever takes pains to investigate will find other aims than health closer to our hearts: the development in children of manners first, then, in order, politeness, courtesy, coöperation, sympathy, charity—and at last even spirituality. But all these depend on health. Ergo . . .

More positively, the articles and authors of EDUCATION for April, 1940, are distinguished for their mutuality: each author treats of a special phase of one inclusive and coördinated program. Moreover, in a world confused by conflict here is harmony. In a nation wherein educators have generally and necessarily neglected health—because teachers were unprepared to per-

form — here is a handful who have trained themselves and concentrated on its conservation. In a phase of scholastic method and subject-matter wherein teachers and theorists are conspicuous for diversity, here is agreement. And in a day when responsibility is more and more avoided, these articles reveal their authors to be men and women who welcome tests of their own teaching efficiency, critiques of their own objectives, investigations into the integrity of their own aims. That is, they dare to have definite purposes, measure their pupils' needs in terms of these purposes, measure results of their teaching in the same terms, and report to their superiors the results of their efforts.

We have written, first, for our professional associates to exchange discoveries, adaptations, and the joy of accomplishment; second, for our educational compatriots everywhere who seek, by scholastic means, to preserve health and happiness and hope on earth; and last but most, for our successors, our educational heirs, the teachers of our children's children, those younger men and women who must broaden the trails we tread, erect cities where we have paused, press on gallantly into new wildernesses.

Readers desiring further information on the subjects of articles in this magazine will have their inquiries welcomed by our authors, whose responsibilities and addresses are listed briefly below.

George Guy Bailey, M. D., is a distinguished orthopedic physician and surgeon in Boston. He is on the orthopedic staff of the Boston City Hospital, and is Assistant in Orthopedic and Fracture Surgery in the Boston University Medical School.

Norman Bradley is a Freshman majoring in physical education at Boston University. His delightful article was rescued from a pile of "term papers" in an Orientation course in his first semester at college. (It suffered from fewer editorial changes per page than any other article in this symposium.)

Alan E. Bresslin is Young Men's Secretary and Physical Director at the Westport, Connecticut, Y.M.C.A. He was formerly a physical director in the Boston Y.M.C.A.

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A VITAL NEED IN HEALTH, PHYSICAL EDUCATION AND RECREATION

EDGAR W. EVERTS

THE tremendous outlays of money on the part of federal, state and local governmental units made necessary to mitigate unemployment and its accompanying human suffering have resulted in the development of a seriously critical attitude toward the allocation of public funds for various social purposes. In this maze of economic-political-social circumstances, educators know their programs will come under closer scrutiny than ever before. Further, the proponents of any phase of education who fail to take definite steps to evaluate their success, and to interpret forcefully their results to the public, will in the future deserve scant support.

We need constantly to remind ourselves that politicians are increasingly sensitive to public demands. Therefore, if the interests of children are to be properly safeguarded, it is imperative that public opinion be marshaled as solidly as possible behind sound educational programs through which definite results may be evaluated and universally interpreted to citizens.

The implication for administrators, supervisors and teachers of health, physical education and recreation is obvious. A beginning must be made in measuring the progress pupils are making in achieving the aims and objectives claimed. But where is this evidence that positive changes are be-

ing made in health, or say, the social behavior of pupils?

In terms of health, for example, where are the school systems, public or private, universities and colleges or other social institutions in which programs are being carefully planned to meet individual needs based on valid measurement procedures? In how many social institutions is the physical condition of individuals being adequately checked and rechecked to determine the progress they are making toward a more vigorous life?

Some State Department Functions

Most of the state legislation requiring pupils to take courses in health and physical education was enacted during, and immediately following, World War I. The nationwide need for increasing physical fitness was the principal argument advanced in securing the support of legislators. In view of the basic motive behind this legislation, it would be a proper question for any prominent citizen, or any group of citizens to ask — *what definite progress has been made in improving the physical condition of pupils who have been subjected to the training initiated under the authority of these laws?*

Inquiries concerning programs of health and physical education administered by the various State Departments of Education yield an imposing array of suggestions, rules, and regulations. These are concerned with the organization of programs designed to further the achievement of educational aims such as health, social efficiency and culture. For the most part, however, they are related to such relatively superficial factors as health examinations of pupils, qualifications of teachers, provisions for facilities and equipment, time allotments, courses of study for both elementary and secondary schools; but in only a few instances, differentiated programs to meet individual health needs based on measurements procedures.

Obviously, these provisions do not guarantee that results will be beneficial to pupils. So far, only New York State is committed to the reorganization of health and physical education based on definite measurement procedures for meeting individual health needs, and including tests to determine such needs and measure results.

Although "courses" in health and physical education have been established by law in many states and carried on for more than twenty years, *no valid evidence has ever been presented to demonstrate what improvement of health or social efficiency has been effected.*

Apparently state authorities in the field being discussed have been concerned more with administrative regulations than with results. The effect of this leadership has been to encourage, and in some instances to aid, local communities to spend more money — increase expenditures for equipment and facilities and make appropriations for salaries of physicians, nurses and teachers of physical education. Certainly, more children have been exposed to academic instruction in health, and larger opportunities have been given for engaging in vigorous physical exercise. Further, academic standards for teacher leadership are more voluminous, and courses of study to stimulate more definite organization of

health instruction and activity programs have been placed in the hands of local schoolmen.

It is only reasonable to assume that some specific beneficial results have accrued to children from these elaborate administrative and supervising activities of the various State Departments. Actually, in terms of results already measured there is abundant evidence that the health of a large number of pupils has been and is every day being impaired.

Regulations requiring minimum time allotments for health instruction and physical education are proper. For such rules are necessary to secure any attention to programs. It is a gross error, however, to suppose that all children need the same amount of time and leadership for health instruction and participation in physical activities. Pupils low in physical fitness, as well as those at the other extreme of the scale, need individualized programs. Otherwise their health is impaired. But such individualized activities require leadership trained for such work and checked for efficiency in terms of results.

The general distribution of pupils into physical activity courses without proper regard to individual differences in physical fitness is only the beginning of a vicious cycle. But not even this is done in most schools today: *facilities and teachers' time have been used almost without any regard to the fulfillment of educational objectives.* We now have merely general "busywork" in physical activities and textbook instruction in health.

The advantages which State oversight provides — in setting proper standards and strengthening the hands of local administrators and teachers— may be preserved and extended, only by securing improved results locally —and *proving* that these take place. The achievement of these ends requires the close coöperation of State and local agencies, based on common objectives and measurements of results.

Specifically, a beginning might well be made in any State by the establishment of demonstration centers in various sections of the state, where recommended programs are carefully planned, and supervised, and pointed to by state authorities for emulation elsewhere. (This is now being done in New York, particularly in the Syracuse area, and in Westchester County.) Prominent features of such a policy would include the solution of such problems as:

1. The planning and supervision of programs to meet individual needs; which involves:

   a. The initiation of proper measurement procedures to determine the status of pupils. Of the various measurement procedures proposed so far, only those concerned with the determination of health needs have been used extensively in actual practice, i.e. medical examinations, PFT tests, and the measurement of special physical and sensory functions, such as "phonoaudiometer," "telebinocular," posture tests, and foot prints.

   b. The reorganization of present instructional programs in order to make proper provision for differentiated instruction and guidance of pupils according to their individual needs.

   c. The proper organization of

intramural and other after-school recreative activities to safeguard the present and future health of participants, as well as opportunities for rational social adjustments.

d. Frequent re-checking of the status of pupils through successive measurements in order to determine progress made toward educational objectives.

2. The administrative adjustments essential in meeting individual needs including:

a. Assignment of pupils to physical education classes primarily on the basis of individual health needs.

b. Integration of the work of various specialists in the school system concerned, such as physicians, nurses, physical educators, parents, guidance counselors, principals, and academic teachers.

c. Adjustment in academic programs and allied or extra-curricular activities of pupils in accordance with health and social needs.

d. Re-allocations of space and securing proper equipment to carry out the program adequately.

3. Methods of acquainting parents, editors and community officials with the various adjustments being made to conserve the health of pupils and to promote their social development.

Local School Department Functions

State legislation and supervision have been only two important factors in the development of the total program of health, physical education, and recreation in the United States. Historically, this extensive program, which has assumed such large proportions in American school systems, has developed from different sources.

First, those aspects of the program which now comprise various specific health services and educational functions, such as health examinations, the hygiene of the school environment, and health instruction, originated separately. Medical inspection, the forerunner of the present "health service" phase, began before the turn of the century, due to the necessity for a more effective sanitary supervision of the school environment and the control of individuals in combatting epidemic diseases. Instruction in hygiene, or the newer term "health teaching," received special emphasis through the activities of the W.C.T.U. which, during the 1880's, became interested in the passage of laws requiring the teaching of physiology and hygiene "with special reference to the effects of alcohol, tobacco, and narcotics." Second, like other innovations, physical education was introduced into many American schools and colleges as a result of European influences, and has been a part of the curriculum in many of our large city systems and private schools since late in the last century.

Coincident with the growth of free public education and other social agencies, each program has expanded. For example, medical inspection has been broadened to more adequately meet the needs of pupils; consequently, the modern "health service" staff includes not only physicians but nurses, dentists, dental hygienists and other health specialists as well. Likewise, physical educators no longer concentrate on gymnastics. Today, supervision of play to achieve social values is stressed. As a result, the instructional program in physical education

has been broadened to include games, dancing, sports, and formal athletics, as well as gymnastics.

Due to the different sources from which these various phases of the program have developed, certain administrative difficulties have arisen. The lack of integration of various specialists concerned in this broad administrative arm of general education may be explained largely through this Topsy-like growth.

Lack of Integration

According to modern educational theory it is assumed that all members of the school personnel have important contributions to make toward the achievement of all educational objectives, and certainly toward the achievement of both health and social objectives. Physicians, nurses, physical educators, guidance counsellors, principals, and teachers have a common focussing point—*somewhere along the line they all deal with each child.* Therefore, it is highly essential that the whole program be *unified* in the interest of efficient educational treatment of children and the proper evaluation of results. But is this really happening in most communities throughout the country?

The plain fact is that in our nation there is precious little integration of school health services in fact, and little more even in administrative organization concerning the health of pupils — that primary aim of education without which all else is vain and futile. Some school reports emphasize the number of physical defects corrected, number of children given immunizations for smallpox and diphtheria, and tuberculin tests accomplished through the health service program. Sections in Superintendents' Annual Reports concerned with physical education fail to report any significant measurement of pupil progress in general physical condition except in a few conspicuous instances. Occasionally the results of skill tests of doubtful validity are barely mentioned.

Although the correction of physical defects and immunization to certain communicable diseases are of tremendous importance in the conservation of life, they do not in themselves guarantee pupils a high degree — or even any useful — physical fitness. Many pupils who do not reveal organic or structural defects in school health examinations may, nevertheless, be disastrously weak in muscular power —the *sine qua non* of active living or service. When given general physical fitness tests many pupils are regularly found too to have serious organic disorders (when followed-up through detailed clinical tests by physicians). Consequently, school physicians should be insistent that PFI tests be administered by physical educators to supplement medical examinations, which of necessity are limited for the most part to subjective observations of specific conditions.

It has been generally observed that, in most school programs of health and physical education, there is woefully little coöperation between physicians, nurses, and physical educators — particularly in dealing with individuals. Nor is the frequent neglect of the health objective on the part of the physical educators conducive to the improvement of these relationships. The use of PFI tests almost automatically closes this improper hiatus be-

tween medical and educational authorities in schools.

Present Programs Economically Unsound

The failure to utilize health measurements efficiently is costly—failure to use any at all is well-nigh criminal: "Poor measurements — slow progress, no measurements — no progress."

What are the money costs of education? Suppose we take one phase, physical education, as an example. Probably a billion dollars have been invested during the past decade in the construction of gymnasia, playgrounds and athletic fields in the United States. This represents, on the average, twenty per cent of the entire school plant which may be utilized for health and physical education. To this investment in physical plants must be added the cost of equipment and supplies and teachers' salaries, which are no small part of the bill that taxpayers have to pay: at least four billion dollars every twenty years! But as yet no rational, not even any decent—*not even any*—attempt to measure or report results in at least forty-five States. This suggests that there have been no worthy results — a statement any taxpayer could safely make today!

Reorganization of Present Programs Necessary to Justify Costs

Since evidence is lacking concerning the precise contributions to the health of pupils through the present expansive conduct of health and physical education, school administrators, in consultation with various members of their staffs, must reorganize present programs—and see to it that practical and demonstrable results are achieved.

The following steps need to be taken:

1. Definite inquiries should be made into the possibilities for improving health examination procedures by school physicians. (The method developed by Edward L. MacDonald, particularly, deserves adoption.)

2. PFI tests and follow-up programs by physical educators to supplement health examinations ought to be initiated. These general physical fitness tests provide a basis for individual educational treatment of pupils, which ultimately involves, in each school and for each pupil low or abnormally high fitness pupil.

   a. Detailed inquiries concerning causes of abnormalities.

   b. Scheduling of pupils for instruction and physical activity in terms of individual needs.

   c. Adjustment of *academic* programs of pupils low in physical fitness to their *physical* powers — as well as similar treatment of those with serious physical defects as recommended by physicians.

   d. Classification of pupils for participation in intramural athletics to secure equality in physical powers.

3. The organization in each school and in each community of a health council or committee to bring various members of the school personnel into a working organization to gather proper information relative to the guidance of individual cases.

Summary

Serious issue has been taken with present state and local administrative practices in which the definite evaluation of results has been neglected. We have suggested only a few of the nec-

essary steps in administrative reorganization to correct the present gross defects. However, the articles which follow in this magazine will give more insight into detailed possibilities for this reorganization based on valid measurement procedures.

Some theorists as well as teachers in the field have objected to the time and effort required to test physical fitness and meet individual needs in physical activity classes. It is interesting to observe that practically all of the criticisms have come from those who have never used PFI tests in accomplishing more precise results—and who often even deny the propriety of concern for the health of their own pupils. "Let the physicians do this," they insist, "we have other functions." . . .

Furthermore, many who have criticized PFI tests never have seen them properly administered. One such criticism was printed anonymously.

It is conceivable, of course, that enough support can be secured to maintain present activities in the field of health, physical education, and recreation through propaganda composed largely of elaborate theoretical promises never proven. Perhaps the public can be satisfied by promises and opinions without recourse to objective evidence. Certainly, the American people have in the past been generous in their maintenance of present schemes in this field.

On the other hand, we live in a scientific age. People are conscious of the scientific method. They are trained, even outside of school, to check judgments with consequences. Even advertisers beseech customers to test their wares in actual use alongside inferior products and compare results. The public is being trained to observe and to understand scientific methods and outcomes through radio, press, and other current periodicals.

Finally, the trend toward objective measurements in other basic educational programs is more marked every year. To turn away from this trend would be to abandon every hope of progress. The only development one can consider is in improved testing. For physical educators to think they can forestall the measurement of results in their own field just is not reasonable in view of present developments in a world where the scientific method is such a large factor in the daily lives of everyone. People who pay money for any product, whether it be education or more tangible consumers' goods, sooner or later are going to demand information as to the quality and quantity of the product.

It has not been the prime purpose of this discussion to exalt any particular testing program, but rather to emphasize some testing as a means to ends. It is futile to use any measuring device unless the information obtained is used in practical ways to improve the status of those who have been subjected to the educational or testing processes. Indeed, it is possible to give health examinations, PFI tests, or any other tests, without any significant results accruing. *The crux of the problem is to plan programs that will minister best to the individual needs.*

Certainly it would be impractical to dissipate the major part of the time of teachers in willy-nilly testing

schemes which attempt to measure everything. Administrators can permit professional workers to use only those means of measurement which have been thoroughly tested and found tc be significant in rightly changing the behavior of pupils.

Returning to the questions raised at the outset of this discussion, it is possible, as is being demonstrated constantly in practice (if only in a very few schools so far) to achieve worthwhile results, at least in the improvement of health, or at least physical fitness, which PFI test users define as "capacity for sustained purposeful physical activity." Hence, school administrators need to reorganize their health, physical education and recreation programs in harmony with those now being developed and reported elsewhere in this magazine. Parents of school children and civic groups likewise should secure action from public servants in the interest of better returns on a large investment of public funds.

SCHOOL HEALTH TESTS

EDWARD L. MACDONALD

THE power of youth is being scrutinized today perhaps more intensely than before any past world conflict. Today we have built upon the experience of past generation, and are ready to put into effect efficient means for the development of super-power in our youth. This work is being accentuated in the present generation. It has been the untiring work of specialists to ascertain individual needs and then to provide for individual differences which hitherto have been lost to view in this seething world.

True education, we may safely assert, is the harmonious development of the physical, intellectual, and moral powers. The better the health, the greater the physical and mental efficiency, and the more completely may one fulfill his obligations to himself and to the world. But the basis of all power begins with physical factors — organic condition and physical efficiency. In order to attain this full and comprehensive health a complete testing program is necessary in three fields, physical, mental, and social.

Health testing lays the foundation for the work of providing for individual differences, especially in secondary schools. Then follow the other two factors and their inter-relationships, together with the first, in the development of the whole program.

The Physical and Medical Examination

The educator is interested in health as a positive quality. He desires the student to cultivate health habits, not as a remedy for disease, but as a contribution to progressive health. Now, *progressive health means more than mere absence of disease; it means progressively increased physical efficiency and power.* First, however, remediable diseases and physical defects—hindrances to educational progress—need to be eliminated. Hence, the purpose of the physical examination is to determine physical condition and to discover these defects that

they may be corrected. This examination, made by licensed physicians, is a test universally used.

Until recently, however, there has been no standardized physical examination record score by which one student could be compared with a group or norm. Each physician used his own technique of administering the examination; and consequently his findings were unique, that is, two physicians examining the same child often reached widely divergent conclusions. For example, the agreement of competent physicians on "nutritional status" of children is not much higher than "twenty per cent better than pure chance" judgment would yield. That is, nearly eighty per cent disagreements in nutritional ratings between two or more physicians examining the same child are common.

Or take another example. So difficult is diagnosis that physicians err on the average from fifteen to thirty times in a hundred in judging the cause of death.

For the past five years considerable study has been given to the improvement of routine medical examinations of school children, and to the proper recording of physicians' judgments of pupil condition in the School of Education of Boston University. A doctor's dissertation appearing in June will describe some of the work done. A Physical Examination Record Form has been devised, with the items arranged so as to simplify, objectify, and expedite the work of the physician in recording his findings. A routine physical examination using this Form takes only from five to ten minutes each for the doctor and nurse. The author of this standardized test has evolved a score—the Medical Rating—which is comparable to and as significant in the physical field as are the scores of the psychological examinations in the intellectual field. This Record Form is published at South Lancaster, Massachusetts, by the College Press, and is complete with a manual of directions both for the medical examiner and for the educator.

The Physical Fitness Index

In the past, organized efforts toward increasing muscular strength and physical endurance were mainly for the purpose of developing physical skills of the few best athletes because of the glamour attached to certain athletic achievements. To bring each pupil's physical health and efficiency to an optimum level has been of secondary consideration, but lately this aim has superceded the athletic objective. For upon the foundation of good physical health rests the future usefulness of each child or citizen.

The *Physical Fitness Index* "is a score indicating muscular strength and endurance, or the relative efficiency of the body for physical activity." The tests measure lung capacity, the grip strengths of both hands, back strength, leg strength, and arm-and-shoulder girdle strength, and endurance. A wet spirometer is used to measure lung capacity. Dynamometers are used to measure grip, back, and leg strength. Arm-and-shoulder girdle strength and endurance are measured by "chinning" to rings, and "dipping" on parallel bars, as many times as possible. These last two tests are different for girls and women. They "dip" to a stall-bar bench with feet on the floor and "pull up" to

rings whose lower edges are at the height of the subject's sternum base, with heels resting on the floor. Calculation of strength from these tests takes into account height and weight.

The Physical Fitness Index excels as a physical test in the determination of individual differences, because low PFI's indicate that a differentiated program for physical development is needed, whether it be a heavier assignment of physical activity, or lightened assignments with rest. PFI's in the middle group should probably follow the regular program of physical activity. For those whose PFI is in the high rating, the intensive program of physical activity should be reduced, and pupils with very high PFI's should be excused altogether from participation in formal physical activities. When PFI's taken at frequent intervals show a downward trend, there is a probable need of medical attention. In this manner the early stages of degenerative disease are discovered which the physical examination may not reveal until serious proportions have been reached.

It is necessary for the PFI test to be used in conjunction with the physical or medical examination. In fact, the PFI test should not be given until the student has been checked by a physician and pronounced eligible to take the test, which is a relatively strenuous procedure. Then the student may return to the physician, taking with him the report of the PFI, which often affords important clues to the physician in making a more complete physical examination. Many physicians recommend that this procedure be followed.

The PFI was first developed at Columbia University. It has increased in favor until it is now well known among physical educators and is recognized as the best, if not the only, standard test of positive physical powers. It is used in conjunction with the medical examination of the organic condition of school children.

PFI testing equipment may be obtained from the Narragansett Machine Company in Providence, Rhode Island, and elsewhere. Testing manuals are published by the A. S. Barnes Company. Norm charts are available at the Boston University Bookstore. The simplest explanation of the nature, values, and uses of "PFI programs" is contained in an article appearing in *School and Society* for October 29, 1939, entitled "The PFI, Complement and Analogue to the IQ."

It should be noted here that competent physicians everywhere approve and endorse the PFI as a highly valid measure of physical fitness—"capacity for sustained physical activity." Indeed, the case is so obvious that it needs no more than a reasonable mind to comprehend the truth. But this does not prevent medical ratings of health to correlate but slightly with PFI's. *For each rating measures a unique phase of health.* Physicians are looking for signs of disease that will shorten life sometime in the near or remote future. PFI's measure *present actual physical powers.* Another more technical reason for lack of correlation is the very low reliability objectivity and validity of medical ratings themselves. Thus, when doctors disagree with each other and even with themselves, it is inevitable that their ratings will disagree with

other measures of even collateral functions.

Thus, testing for individual differences on the physical plane is met by the use of the Medical Rating and the Physical Fitness Index conjointly. Since scholastic achievement depends upon physical vitality of the whole body, the organs of vision and hearing are used specifically in the learning process and consequently need particular considerations.

Vision

Defective vision may not manifest itself until the child is of school age, when he begins intensive use of the eyes for several hours each day in close reading from a book and distant reading from the blackboard. Extreme cases of faulty vision become apparent at this time and thus receive attention but a great many cases are obscure, and poor scholarship resulting from these is wrongly attributed to inattention and laziness.

The use of the *Telebinocular* in testing vision will reveal obscure cases, which, while perhaps not at present directly affecting scholarship, produce eye strain, and in turn, nerve strain. In time, other parts of the body may suffer in consequence of continuous and possibly cumulative taxing of the nervous system. Properly fitted glasses frequently remedy these deficiencies and phenomenal improvement in scholarship often occurs.

The Telebinocular appears, today, to be the most satisfactory instrument to measure vision short of the delicate, complicated, and costly instruments used by ophthalmologists. It measures nine kinds of visual defects—the old Snellen test chart measures but one—distance acuity. It does not require medical skill in its use. Any intelligent person can readily learn its technique of administration and can obtain accurate results. The instrument may be obtained from the Keystone-Betts Company, Meadville, Pennsylvania, who will send detailed information for the asking.

Hearing

Defective hearing, itself, is difficult to remedy, and the satisfactory solution of the problem educationally is difficult to suggest. However, it is easily possible for serious consequences to develop from inattention to this defect, since it may often indicate a condition requiring medical attention. Moreover, often school adjustments may be made to checkmate natural consequences of poor hearing. Hard-of-hearing pupils may be placed near the teacher or the center of the room. Lip-reading may be taught. Medical examinations and treatment often are effective in arresting further loss of hearing. But adjustment to defect, or correction, depends first on the discovery of deficiency.

To determine accurately "hearing losses" the *phono-audiometer* is the proper instrument to use. This apparatus is now so familiar to schoolmen, particularly in New England and New York, that no description of it is necessary.

It is important to remember, however, that the phono-audiometer and the telebinocular are used to discover only faulty *functioning* of the organs of hearing and vision, *not* diseased conditions of these organs. The physician alone can do this. However, faulty vision is usually caused by

some defective mechanism of the organs of vision rather than by disease, past or present; whereas, cases of faulty hearing are nearly always the result of disease, past or present. Consequently, the phono-audiometer test may be of tremendous significance from a general health viewpoint.

The instrument recommended is the Graybar Audiometer, made by the General Electric Company, Schenectady, New York.

REDIRECTING PHYSICAL EDUCATION: ADMINISTRATIVE POLICIES AND ACTIONS

THOMAS H. HINES

1. Adoption of Aims

FOR twenty years I "carried the torch of physical education" in Brookline, a suburb of Boston, only to discover in the end that it had been unlighted. That is, I proclaimed everywhere the values to our pupils of physical activity. I repeated that we should "put education into physical education and put the physical into education." But increasingly as the years passed over my head I doubted my own professional integrity! What was, after all, being *accomplished* for pupils in Brookline physical education programs? Suppose some one should ask me to prove my hopeful assertions, which became less and less confident as time rolled on?

In point of fact I could not prove a thing, for I had no records that meant anything for certain and in terms of educational objectives. Worse, if possible, I had no definite aims for pupils. To keep them busy, hoping they would increase in skill, courtesy and self-control were more or less vague objectives. But that was all.

Brookline Public School physical education programs were well thought of, though. We have had gymnasiums, even in elementary schools, for many years; also, special teachers, regular classes, and good equipment. Playgrounds were well distributed over this Town of 50,000 souls. The Municipal Swimming Pool, oldest in the nation and still a proper source of local pride, was, and still is, used for High School aquatic instruction. Intramural and inter-school sports were well conducted. State Supervisors regularly chose Brookline to provide demonstrations for State, District and National Physical Education Conventions, and held us up as a good example when they lectured abroad in the land. But I became more and more dissatisfied. Something vital was lacking.

At last the lack was remedied, the defect cured, the need met. I discovered what I had been looking for—a definite aim and a system of proving the value of what we try to do for pupils in Brookline. The aim is physical fitness and the system of measurement PFI tests and re-tests, preceded by medical examinations and accompanied by analyses of individual pupil health service needs by the combined efforts of physicians, nurses, physical educators, principals, headmasters, teachers, parents and pupils themselves.

This program has already been de-

scribed in detail in a previous article "A New Emphasis on Health" published in the *Journal of Health, Physical Education and Recreation* in January, 1939. What I propose to do here is to outline what seem to me to be essential administrative procedures in redirecting physical education in any community. May I observe first, however, that while Brookline is blessed with unusually good facilities and a devoted staff of teachers, nevertheless we are not otherwise specially favored. For example, several school buildings are crowded. Again, we have only a dozen full-time physical instructors for 6,500 pupils, or one teacher to every 541 children. This is just about one-half of the "desirable standard" set by school administrators a decade and more ago. In the high school there are four physical instructors for 2,000 pupils, or one to every 500 pupils. This is reported merely to indicate that we do have handicaps.

2. Securing the Understanding of Associates

The first step in effective administration is understanding. Therefore, as soon as I determined to redirect physical education in Brookline to discover and meet individual pupil health needs through the coördinated use of medical examinations and PFI tests, I made personal studies of literature and visits to school systems where the redirected program had been longest in use. I also induced most of my physical education staff to take courses in PFI measurements and follow-up procedures and later even arranged for an evening seminar class for my staff, which met weekly for a semester under the auspices of Boston University. I also conducted staff meetings, in which testing and follow-up procedures were reviewed, and had numerous individual conferences with my teachers.

These classes, seminars, and conferences are, in my opinion, absolutely necessary to the proper launching of any new program. They have been continued at irregular intervals.

3. Securing Administrative Approval

The next step was to secure the understanding and approval of my administrative superiors and other coordinating officers for what I proposed to do. The Superintendent of Schools was approached first. Naturally, Mr. Caverly wanted to know what was involved in the way of policy, facilities, costs, readjustments of academic curricula, services of physicians and physical education personnel. My trump card here was assurance that very great improvements could be made without any additions to the physical education department staff. In a word, I said, all we needed was official approval!

The advantages of the new departures were so many and so appealing that approval was instantly forthcoming. But, I pointed out, if certain administrative changes are made, very much more can be done. "Let us secure approval, then, from the School Committee," countered Mr. Caverly. This was done next.

The Brookline School Committee has a sub-committee on Hygiene, composed of two physicians, a layman and the Superintendent of Schools. So the Superintendent arranged for a meeting in which formal approval

might be secured for certain definite steps. Testing was discussed first. The sub-committee approved. Modifications of programs for certain schools were then suggested. The sub-committee approved. The extension of programs into grades six and seven was then proposed. The sub-committee by now was eager for more. "Why not begin in grade two at once?" they asked. It was time to call a halt on these men!

Three years later (this was, perhaps, waiting too long) the redirected program, which had been in full swing all that time, was submitted for approval to the entire School Committee of nine members, and was formally approved.

It seems to me that these administrative steps are vital to the lasting success of any educational program, and particularly any that involves measurement.

4. Securing Approval and Cooperation of Medical and Nursing Staffs

Relations with medical and nursing staffs are of the greatest importance in the use and follow-up of PFI tests. In Brookline we have been unusually fortunate in having highly competent and devoted medical staffs. Every year each pupil in the entire school system is examined—and before November first. Nurses make home visits regularly. Our school physician, Dr. Hassman, supervises these services and confers with me concerning problem cases. So, before PFI tests were introduced, Dr. Hassman was interviewed. He was familiarized with testing procedures, the uses we proposed to make of results, and the necessity for medical guidance of physical educators.

Three minor mistakes of omission were made, which other administrators should avoid. First, we somewhat carelessly compared PFI's with medical records. Now, it often happens that, on following up a low PFI pupil, the physician, nurse or physical educator discovers a defect not noted on the medical record. To the beginner in PFI testing this sometimes appears to betoken carelessness in medical examinations. The beginner, therefore, is likely to err further by calling these disagreements to the school physician's attention as "errors in medical judgment." On the contrary, these "errors" cannot be such, because physicians do not claim to and cannot possibly discover every medical defect in every pupil by routine school examinations. If physical education administrators and teachers will remember that the PFI is a searching test, *using instruments,* that one of its purposes is to supplement medical examinations (not substitute for them) and that errors are made in PFI testing, too, many unfortunate misunderstandings will be avoided.

Second, our physical educators erred by tending at first to judge causes of low PFI's without waiting for preliminary medical rechecks. That is, pupils were sometimes recommended to modified activities, rest, change of diet, and so on, before securing the school physician's judgment. This defect we soon remedied.

Third, we often called family physicians ourselves to secure advice in meeting individual health needs of pupils with low or extremely high PFI's. This is quite wrong. We should have, and eventually learned to, notify the school physician. Then he calls the

parent or the family physician, or requests us to do so.

5. Coordinating Physical and Academic Programs

Our relations with headmasters, house-masters and principals have always been highly coöperative. This, I believe, is because I try to keep them informed of contemplated changes and secure their approval for actions which affect them before they are even recommended to the Superintendent of Schools.

The assignment of pupils to physical education for from none to five periods of activity weekly in the gymnasium according to individual needs was easily accomplished! In many schools it seems that this is almost impossible to do. But in the Brookline High School, which was badly crowded, all that was necessary was to lay the entire plan before Mr. Wilfred H. Ringer, the headmaster. I simply pointed out that "health is first," that academic efficiency depends on physical fitness, that in the long run parents welcome adjustments which aid them to care for their children, that we now have reliable and valid tests to determine needs and measure progress, that our physicians and physical educators are eager to do their parts, that the new adjustments will free the stronger pupils from attendance on activities they need less so they may concentrate on academic studies and get their play "after school," that our physical educators will thereby be enabled to concentrate on pupils who need *them* most. Mr. Ringer's response was instant, positive and enthusiastic.

Our arrangement is to give PFI tests in May and June. Thereafter we notify Mr. Ringer of the number of physical education periods needed by each pupil. Academic programs are then "built around" physical education during summer months.

Several other administrative adjustments have since been made, and some even at the suggestion of the Principal. For example, no new pupil entering high school is permitted to plan an academic program *until* he or she has been medically examined, PFI tested, and recommended for from one to five periods weekly by the Director of Physical Education. Again, no pupil may take an additional academic course unless and until approved by Mr. Ringer after he has checked his medical and physical records. In fact, a feature of our high school program is the care with which scholastic adjustments are made to each pupil's physical as well as mental capacities.

Today many parents are advised that their children should plan to take five or even six years to complete the high school course, and these parents, when properly informed of our aims and methods, approve enthusiastically. This is very far indeed from the old lock-step "four-years-for-all" routine. Again, our house-masters, each of whom is in charge of a class, are thoroughly conversant with the PFI as "an index of capacity for sustained activity," whether mental or physical. Each house-master has each of his pupil's physical fitness score before him whenever any problem arises, and uses the PFI in advising pupils and parents in conjunction with the IQ. Eventually, it is my hope that

each teacher in Brookline will refer to PFI records before advising any pupil on an academic or any other matter.

6. Improving Relations With Parents and Pupils

Our relations with parents and pupils have been very happy. Policies in this area are simple: I never insist. Decisions are sometimes rather ostentatiously left to the responsible parties. If a parent comes with the request that his offspring be excused from physical education (when I have scheduled him or her for five periods weekly!), I say, "By all means, do as you desire!" "Do you mean that my George actually doesn't have to take gym?" asks the parent, aghast. "Certainly not," I reply, "this will save our teachers the trouble of struggling with an unwilling pupil and free them to do more for pupils whose parents are concerned about their health."

"But remember," I usually add, "that, as old Schopenhauer warned," and I point to an illuminated motto on the wall back of my desk, " 'To neglect one's health for any other advantage in life is the greatest of follies.' " This usually brings the parent around. It is a fact, anyway, that no parent has yet left my office without begging me to do anything I want with his child. "Only," they sometimes add, "please don't tell my son I was here!"

Pupils are treated similarly. A young girl coming to me with a request to drop physical education is asked, after some preliminary palaver, if she wants to be beautiful. Of course she does, she quickly admits. It is simple from there. I show her the relations between feminine charm and physical fitness, and she becomes eager to "coöperate." Boys are approached with the suggestion that every real man wants to be healthy, strong, an athlete, or an explorer. Even musicians need great strength (proportionate to their size) for skill and endurance. The boys soon catch the point! No, parents and pupils are no problem.

7. Improving Testing Techniques

The success of any educational program depends largely on accurate testing. If testing is not painstakingly done pupils lose confidence in teachers and program; teachers lose respect for their own functions; administrators can no longer trust reports; physicians and nurses are misled; and parents are misinformed. This is true for any testing but particularly in PFI work, and first because the qualities tested are so important to the success of all else. No health no learning and, more important, no health no citizenship. Every increase in physical powers means increased *capacity* to learn and *capacity* to behave coöperatively. In physical education we build health: *power* to learn, to coöperate, to act charitably. We also try to direct learning into proper channels. But above all "optimum health for each and every pupil" is our slogan. But increases can not be certainly made without testing: "orderly progress toward any remote goal depends on measurement."

Besides, ordinarily the tests are fascinating to pupils. If they are well given they will continue to be so. Moreover, since PFI tests are simple and objective it is easy for pupils to see whether or not they are properly

administered. Finally, since there are always some low PFI pupils chagrined at their unfortunate records and anxious to discredit the tests or testers by claiming soreness of muscles, strains, silliness of the testing program, or what not, teachers must be alert to protect themselves.

The easiest way to protect oneself is not to test at all. In Brookline we have taken the more satisfying way. Testing techniques are standardized by several methods. We occasionally have staff meetings in which techniques are discussed and demonstrated. The supervisor visits schools when testing is being done and watches for slips and errors. Occasionally a more experienced University instructor is invited to conduct a seminar, or round-table discussion on testing, record-calculating, and follow-up.

The ideal testing procedure for a city would be to delegate two persons to supervise testing and follow-up work as their sole function.

Of equal importance to good testing techniques are the treatment of pupils and records. For example, we never make a Roman holiday of testing. Pupils are run through the battery as a matter of course rather than as an "event!" More important, pupils are never urged to "strain to the very limit" in tests. We do not shout "heave! heave!" We do not say "now, get that last ounce!" Rather do we say "enough!" as soon as we perceive a climactic struggle commencing for "that last half of a pull-up," or "that last ten pounds in leg lift." Our records suffer slightly, say by two to five per cent, in reliability. But this loss, we think, is more than counterbalanced by a gain in medical and parental approval.

Then, too, we avoid competitive attitudes in conducting tests. Whenever we observe a pupil bragging about what he is going to do or has done, and particularly when he says, "I'll beat your record," we "stop the show" long enough to explain to everybody that "each pupil is different, has a different norm, and should compare his own previous records with his present records." "A good boy or girl is one who improves his own record" we add.

In giving tests to girls, particularly, we are careful not to embarrass anyone. We even go so far as to give back and leg tests in a separate room, so each girl will have complete privacy and no other girl need know her scores. Of course, women teachers do all testing of girls.

"Each pupil's record is his own business and no one else's," we affirm. Therefore, we post no records, give no prizes for "good performances" or "great increases." But the PFI is not "a secret" like the IQ, to be kept from the pupil or parent. Each pupil should know his own score and *I insist that my physical education teachers know the PFI's of all their pupils.* This is not difficult if done systematically. During the summer vacation teachers can memorize, say, five scores a day. Once in mind and associated with the pupil's physique, PFI's are easy to remember. Indeed, my office secretary knows the PFI of practically every pupil in a high school of 2,000 pupils.

8. Developing Procedures to Meet Individual Pupil Needs

Perhaps the most difficult phase of PFI programs is to determine upon and execute proper remedial, corrective, or developmental adjustments.

It should be remembered, first, that physical educators do not "diagnose." Nor do school physicians "treat" pupils needing medical care. These pupils are referred to family physicians. But there are many with weak muscles, poor posture, obese, malnourished, lazy, (apparently — usually some other cause makes such pupils appear lazy), bookworms, flat-footed, nervous, overworked at home, indulged by parents, and so on.

When these pupils are first discovered to need individual health guidance they are sent to me or to one of the physical educators for advice. This we give to the best of our ability, realizing more and more each year how inadequate were our training and experience for this new and vital work. Then the pupil is assigned to the most convenient periods for activity. When any class assembles on the floor or playground, those needing special activities go to a special room or part of the gymnasiums for individualized programs. If possible, two physical educators are on the floor. One takes the regular class for that hour, while the other takes the special-group pupils. As work for the latter group is highly individualized, each class through the day or week may have a different membership.

Occasionally home visits are made by nurses or even physical educators to secure parental coöperation in addition to school activities for pupils. In elementary schools special "after-school corrective classes" are conducted by our devoted teachers. These, for low PFI pupils, take the place of game programs. It is highly significant that many of our pupils elect to take such work: *They have learned in school that success and happiness in any sport or study depend first on resting and then developing strength.*

Contrary to the natural beliefs of observers of "PFI programs" our most difficult "cases" are those pupils whose PFI's are "too high." Now, the determination of *"too* high" is difficult. In general, any boy whose PFI is above 160 or any girl whose PFI is above 150 is "too high." But this rule has some exceptions. Almost certainly a PFI of 180 is "too high." Such pupils are almost always high strung, nervous, problems at home because so active, and often poor students because they cannot concentrate on mental activity. Moreover their natures and strength induce them to rebel at such sedentary activities, as study, rest, sleep, handcraft, laboratory science, reading and even gossip. But such "activities" are most proper for high PFI pupils. If such high-strung children are permitted to continue their strenuous muscle-building activities, they are likely to become increasingly difficult to guide, sometimes they even fall into anti-social attitudes. From these the descent is easy and often rapid to "nervous breakdowns," disease (tuberculosis, particularly) or even crime.

Brookline has but few of these problems as yet. Our pupils are more likely to be over-indulged in sedentary

and gastronomic ways. But everywhere the proper disposition of "high PFI's" is rest — and this can be assured only through the willing and understanding coöperation of each pupil individually.

9. Exorcising the Marking Evil

School marks are one of the most devastating of school practices. They are likely to be inaccurate, they cannot be interpreted properly by parents, who nevertheless use them to shame their neighbors, or hide them from neighbors in shame, they always tend to alienate pupils from teachers. These are only a few of the curses of the modern school marking system. In Brookline physical education we have solved this problem effectively—cut the Gordian knot—we give pupils only pass or failing marks. Pupils are taught to regard improving PFI's as significant—and pupils do so. The report card mark indicates only whether the pupil is coöperative with teachers in meeting his own needs.

10. Garroting the Bugaboo of Sports

In the conduct of athletics we are moving steadily toward the abolition of all "gate receipts." Why should pupils and parents be free to visit the chemistry laboratory or assembly or school play or graduation exercises but be obliged to pay to watch their friends and offspring play on athletic fields? Every school department supplies chemistry reagents and retorts—in Brookline it also supplies athletic paraphernalia. This is a first step. There are likely to be many others.

ADMINISTRATIVE PROCEDURES IN INTRODUCING TESTS IN LARGE CITIES

Richard F. Hayes

THIS paper will deal with the introduction of the New York Physical Fitness Tests and follow-up programs in Yonkers, New York, a city of 150,000 people. The first director of physical education for the city to have charge of both secondary and elementary schools was appointed in 1935. It was evident from the beginning that programs for secondary school pupils had not previously been based on individual pupil needs. This was largely due to the fact that no one had been vested with the responsibility of making physical education an accepted integral part of the educational program, put partly because there was only one set of testing equipment available in the nine secondary schools. This is noted to explain why Yonkers had not, long before, used PFI tests and individualized physical education to meet health needs. I am convinced that, to utilize "PFI programs" effectively, they should be planned and supervised by someone who will (1) secure and maintain the understanding and support of the school superintendent and Board, and (2) maintain standards of testing and stimulate continuous study and improvement in teachers.

Several steps were taken, of which five seem to be most important for administrators who contemplate the introduction of the PFI testing pro-

gram. I propose to discuss each very briefly.

1. Preliminary steps were taken, during the years 1936-38, to bring about whole-hearted support of a testing program by the staff through faculty discussions, visits to other systems using the tests, and references to the state requirements which strongly advocated use of the tests. During this period I was privileged to sit in on several discussion meetings with a small group of men who were using the tests and a few others who anticipated using them. This group had as advisors Ellis H. Champlin and Fredcrick Rand Rogers. These conferences yielded concrete material illustrative of the measurement programs being carried on in other communities, which I then presented to our Yonkers physical educators. These preliminary steps of familiarization with the theory and practices in schools where tests are successfully used are, I believe, necessary prerequisites to beginning actual testing in any community.

2. At my request Dr. Lloyd N. Morrisett, Assistant Superintendent of Schools in charge of Secondary Education, invited the State Education Department to make an inspection of Yonkers secondary schools. Three members of the physical education bureau spent a day visiting the schools during February, 1938. Mr. Champlin, Dr. Morrisett, members of the physical education and the medical department held a joint meeting in the late afternoon. Among other things the chief of the physical education bureau recommended that sufficient equipment be provided to get a measurement program underway. I cannot overestimate the value of authoritative support of the PFI program — and particularly of advice toward securing testing apparatus.

3. Three sets of apparatus were purchased during the summer of 1938. The director personally shifted the four sets from school to school during the succeeding school year. Early in September of that year Dr. Rogers spent a day in the city. The morning was spent in supervising the technique of the men in testing boys and in the afternoon there was a demonstration of the methods used in testing senior high school girls.

All of the schools gave the test twice during the school year 1938-39 to all pupils not excused for medical reasons. It was not possible to do much retesting because of the necessity of shifting the equipment. Five additional sets were purchased in the summer of 1939.

Another small senior high school was organized in the spring of 1939, but with nine sets of equipment available comparatively little shifting was done except in one junior high school which is housed in four different buildings. This has made it possible to retest many individuals with low PFI's this year and to initiate some interesting case studies.

Careful attention to the technique of testing has been given by the director in supervising teachers administering the tests. A constant effort has been made to eliminate personal errors that would make the scores unreliable. Cumulative record cards are kept showing the physical education histories of all secondary pupils. During the present year the tests are being

given twice to all girls and boys from the seventh through the eleventh grades and once to twelfth grade pupils.

These preliminary testings, re-testings, checking of techniques and analyses of results helped greatly to orient our teachers. They then really began to understand the whys and wherefores and see future desirable outcomes for themselves as well as for pupils.

4. Statistical reports for each school are now made out twice a year showing the number tested, the range and median scores of the SI, PFI, age and weight. These reports show how futile it would be to use subjective opinion as to the physical condition of pupils in any school. It was found that certain schools which the director had assumed to be superior physically were at the bottom of the scale. This year each teacher has started and is reporting on two or more case studies. Some of these cases were selected because of extremely low or high PFI's, while others were emotionally unstable pupils, socially maladjusted or behavior problems.

Copies of the book *Fundamental Administrative Measures in Physical Education* were provided for all teachers, as were the Clarke *Case-study Questionnaires*. The medical department has given material assistance by examining all low PFI's first in each school; we have one medical examination in the junior high schools and one in the senior high schools.

Perhaps the most potent impetus in bringing the program to the attention of those outside the department was provided by the distribution to the assistant superintendent, the secondary principals and physical education teachers reprints of the article in *School and Society*, "The PFI Analogue and Complement of the IQ" (October 29, 1939). Several schools held faculty meetings at which physical education teachers gave demonstrations of the tests and there were general discussions held based on the article. May I reiterate here the importance of continual study of literature in PFI testing and individual health programs. Physical educators being with almost no practical knowledge in these fields are likely to assume that there is nothing to learn once testing and scoring techniques are mastered. But the facts are far otherwise. Testing should be only the beginning of study.

5. The PFI scores have been grouped in three classes, the lower quartile called class C, the upper quartile class A and the middle fifty per cent class B. One senior high school scheduled all physical education according to these classes. Others have organized squads within the physical education period on the basis of the PFI and some intramural leagues in the junior high schools have used the SI to equalize teams in contests.

All of the schools have given their low groups modified programs. Some pupils have been taken out of physical education classes entirely and others have been assigned to additional activities. In every school we have selected a few outstanding cases of high, low, or rapidly dropping PFI for careful analysis, follow-up and retesting.

Thus the program has come to have meaning for *individuals.* This is the greatest value derived thus far from our testing. Pupils seek conferences with teachers relative to their individual physical fitness needs and are actually changing their behavior outside of school, then coming back and asking to be re-tested. Second to this pupil motivation should be placed the increased interest in and recognition of physical education by principals and academic teachers as an accepted and integral part of the secondary school curriculum. Third, our physical education staff is gradually being re-vitalized. We are acting more purposefully, with greater confidence and understanding, with more respect for our functions — and incidentally we are receiving from administrators, other teachers, pupils and parents that regard and appreciation without which professional work would be barren indeed.

DEVELOPING PHYSICAL FITNESS PROGRAMS IN SMALL SCHOOLS

H. Harrison Clarke

PHYSICAL education has four major objectives, as follows (1) physical fitness: the development of the organic systems of the individual through large-muscle activities and through right habits of living; (2) *social development:* the development of standards of conduct and the ability to get along with others; (3) *skills:* the development of neuromuscular skills in general and of recreational skills in particular; and (4) *appreciation:* training the spectator of sports activities and developing an appreciation of the human body, biologically and esthetically.

The physical fitness or vitality of the individual, however, is the first concern of the physical educator, for this quality is fundamental to the efficient functioning of the organism physically, mentally, socially, and emotionally. Any physical education program not directed primarily toward this goal must necessarily fail of efficiency in approaching any other goal. Conversely, if the physical objectives be realized all others will be easier to approach. Thus, the development and continuous improvement of programs which conserve health, vitality, or physical fitness, are logically prerequisite to all others and should take precedence in the minds and programs of purposeful educators.

During the past fifteen years New York State particularly has been improving and experimenting with such a health or physical fitness program, until today it is an accomplished fact in many favored schools. In brief, this program (which has been outlined in the State Syllabus since 1934 and has the effect of State law) embraces steps (a) to determine the physical fitness of each pupil in school in accordance with his individual powers, and (b) to institute individual corrective and developmental programs for those who require them. This pro-

gram is based upon the use of medical examinations and the Physical Fitness Index to determine individual needs and the effects of the program upon the physical fitness of the individual. It is with this phase of physical education that this report is concerned, and particularly with its use in small schools.

Significance of the Physical Fitness Index

In considering the significance of the Physical Fitness Index and in intelligently using it in physical education programs, two main factors should be kept in mind. The first of these is that the PFI is a generalized index — not a diagnosis. It may be compared to the use made of clinical thermometer readings by a physician. If the thermometer reading is above 99° it tells the physician that *something* is wrong, not *what* that something is. In like manner, a low PFI indicates a lack of physical condition, a lowered body vitality, not what is causing that lack. As the patient with a fever is studied by the physician, so the individual with a low PFI should be studied by educators, in order to determine the cause or causes of his condition. The analogy may be carried further. Individuals with high or rapidly changing temperatures almost always need a physician's care. Individuals with low or rapidly changing PFI's need the physical educator's care. They may or may not also need the physician's care.

The second factor to keep in mind is that, in order for a condition to affect the PFI, it must have systemic implications—not be confined to isolated parts of the body only. For example, if one has a sore toe it might be an inconvenience and an annoyance, but it would not appreciably affect the strength of the individual or lower the PFI, at least not immediately. If, however, that same toe became infected, a systemic condition would be established and the PFI would drop. Therefore, if such conditions as body fatigue, lack of exercise, improper diet, diseased tonsils, abscessed teeth, ulcers, cancers, and the like, have total-body reactions, the strength of the muscles will be affected and the PFI will decline. This point cannot be emphasized too strongly for those who wish to have a complete understanding of the significance of the Physical Fitness Index.

The Selection of PFI Cases for Study and Treatment

The selection of PFI cases for study and treatment is not simple. The belief held by some—that only PFI's in the lower range of scores need attention — is erroneous. Too often, however, the validity of the test has been attacked on this assumption. It is now realized that the designation of "all below" an arbitrary PFI point, such as 85, as needing "individual care" is inadequate, since by so doing many cases needing special developmental programs are missed. Actually, there are at least three groups needing special consideration:

1. Individuals with PFI's in the lower ranges. The abnormally weak obviously need attention, if only to increase their strength.

2. Individuals whose PFI's decline on repeated tests, regardless of their PFI level. Such drops are defi-

nite danger signs, indicating an undesirable change in physical condition which needs to be checked.

3. Individuals with PFI's in the upper ranges. Often an extremely high PFI (150 and above) may be an indication that the individual is over-trained, over-active, high-strung, over-stimulated, or over-developed. In neglecting to reduce the muscular powers of such individuals, a rapid decline in physical fitness frequently has resulted and in some cases serious systemic disturbances have occurred.

The Physical Fitness Program

The "Physical Fitness Program" is an individual program *for physical educators,* which should be based upon case studies of pupils selected as needing physical guidance. The first step in conducting this program is to survey the individual's health habits for direct reasons, for contributory reasons, or for supporting conditions of the low PFI. Each "low-fitness pupil" should first answer a health-habit questionnaire,* designed to reveal conditions that may affect his physical fitness. This questionnaire should include questions on the following: living conditions, fatigue, emotional states, dietary practices, amount of work, play, sleep, nature of hobbies, amount of physical exercise, frequency of minor ailments (headaches, colds, etc.), constipation, and parental health.

Individual conferences, based on the answers to the questionnaire and such supplementary information as academic success, weight record, mechanical or functional impairment, recent illnesses, accidents, and operations, and the results of the annual medical examination, should then be held. In each conference the teacher of physical education should be alert for openings that will lead to the final cause or causes of the low PFI, following them up energetically and discussing possible remedies in order to guide the pupil in improving his condition.

Home visits by the school nurse may be desirable to secure parental coöperation, especially if changes in dietary and other health practices are necessary, or if the correction of physical defects is involved. The advice of other specialists, such as physicians or psychiatrists, will frequently be needed when the cause of the low PFI points to physical defects, organic lesions, or personality maladjustments. It should be emphasized that the physical educator does not diagnose in these instances. He may suspect — *but should refer to specialists in these areas.*

In the majority of cases the treatment of low-fitness pupils will center in the physical activity program—which often means relaxation—and in the modification of health habits. Developmental programs may consist of vigorous large-muscle activity, covering all major muscle groups of the body, and including activities that are stimulating to the circulatory and respiratory systems. PFI tests repeated at four- to six-week intervals will reveal the progress or lack of it being made by each pupil. If fair improve-

* See "Case-Study Form and Health-Habit Questionnaire for Pupils with Low Physical Fitness," prepared by the writer and available through the Syracuse University Bookstore, Syracuse, New York.

ment is recorded the physical educator may well feel that his program is effective.

However, when any individual fails to register advances on re-tests it is necessary to re-study the case. At this point a complete case study is indicated, beginning with a re-check on health habits, and including a careful re-examination by the school physician, who may wish to include certain supplementary tests not included in routine school examinations, such as basal metabolisms, X-rays, and others. In continuously recalcitrant cases, conferences with other school officials such as the principal, the physician, the nurse, the guidance director, the home-economics teacher, and the classroom teacher, may be desirable in order to exhaust all possible leads in finding the cause of the low PFI.

If a physical defect or an organic lesion is found by a family or "consulting" physician to be the cause of the individual's low physical fitness, its correction is obviously necessary. Treatment in these cases may require surgery, hospitalization, medicine, or dentistry, depending upon the nature of the defect. Such treatment, however, is the responsibility of parents whenever financially possible. If this is impossible, other steps should be taken to insure the child a fair educational opportunity.

In certain cases a condition of chronic fatigue or hypertension may be found. In these cases relaxation, rather than large-muscle activity, is indicated. In helping these individuals it is often necessary to suggest curtailment of extra-curricular activities, or even of academic programs. Participation in "pressure" activities, such as doing school work under limitations of time, and competition for grades, favors, prizes, and honors in the school should be avoided. (Of course, competitions are always improper in school.) In physical education classes individuals with slight hypertensions should participate in rhythmic exercises and hiking. Vigorous athletics are contra-indicated. Rest, of course, is desirable, and is essential for advanced cases. Cots with blankets should be supplied for these pupils and placed in a location free from interference, out-of-doors if possible when the weather permits.

Inaugurating Physical Fitness Programs in Small Schools

Physical fitness programs are not easy to conduct. They require hard work and close attention to detail. These requirements, coupled with the usual heavy load of the physical educator, make the problem of inaugurating and conducting such programs in small schools especially difficult. Many physical educators, however, are attempting them, feeling that the benefits derived *by the pupils* in increased health, fitness, and academic success, and *by themselves* in professional growth are well worth the effort and attendant sacrifices.

An adequate and efficient program depends, however, upon a reasonable teaching load for the physical educator, certain administrative adjustments in scheduling pupils for classes, and an adequate budget for meeting the costs entailed. An over-worked physical educator, a haphazard scheduling of classes in physical education,

and lack of funds certainly are not conducive to effective physical fitness programs. The serious and purposeful physical educator, in many instances nevertheless, will accept these conditions at the start, believing that a thorough demonstration of the value of the program will convince administrative authorities, boards of education, and the community that the program is needed and will result in any necessary adjustments to guarantee its effectiveness.

The best advice that can be given to the physical educator inaugurating a physical fitness program when the conditions are other than ideal, is to proceed slowly and do *for a few selected pupils* a thorough job of each step as it comes up. This means, first of all, thorough and accurate testing; then thorough case-studies, thorough health-habit surveys and interviews, and thorough treatment. *No halfway measures should be considered acceptable.* It is better judgment, therefore, to start with only those who can be conveniently and efficiently handled rather than to include the entire school in the program at once.

This procedure has several advantages as follows: (1) Sufficient time can be taken by the physical educator to make a complete "follow-up" of each pupil included in the physical fitness program. (2) The physical educator has an opportunity to try out procedures and to routinize desirable ones with a few cases, rather than to become confused with a great many. (3) Successful accomplishments with a few PFI cases can be used effectively to convince administrative superiors of the necessity of the program for all. (4) The physical educator is more apt to attempt the program on this basis. (5) Efficient programs, needed assistance, necessary supplies, equipment and facilities, and desirable arrangements may logically be expected as outcomes of such a procedure if properly handled and the results effectively presented. In fact, several small school physical educators have already had this experience.

There are two main methods of inaugurating physical fitness programs in small schools (and in large ones, also) when the physical educator wishes to make a modest beginning and do an effective piece of work:

First, test only junior high school grades *and select from these grades ten or twelve cases for each physical educator on the staff for intensive follow-up work.* Judgment should be exercised in the selection of these individuals in order to get those most in need of this service and those most likely to benefit from it. Thus, the physical educator may select several in the low ranges, one or two who have exceptionally high scores, and possibly others whose scores are dropping; provided, in this situation, there have been two or more tests administered to each individual. It will be helpful in making this selection to administer health-habit questionnaires to a larger group of "likely candidates," selecting those cases for follow-up work which seem to have the greatest possibilities.

By "greatest possibilities" we mean (1) those furthest from the norm, who can change most, and (2) those whose defects or deficiencies are most susceptible of improvement. Thus, one infantile paralysis case requiring constant medical advice and lacking home

care might be dropped for another such case in which home coöperation is excellent. The reader may observe here that the former case "needs him most." We suggest that possibly attention first to the most responsive case will so strengthen the school that more effective work can be done later with the more recalcitrant case.

A complete follow-up program should be conducted for these pupils only; others may be added from time to time as progress is made and time permits. If possible, these pupils should be placed in the same physical education class, which will be in addition to their regular physical education work, so that developmental programs can be efficiently conducted. Additional low-fitness pupils may be included in these classes, also, but should be given developmental programs only, until such time as the physical educator may have an opportunity to study their needs thoroughly. The seventh, eighth, and ninth grades only should be included in this method at first, as the amount of follow-up that can be attempted in any school is limited at the start and should be concentrated at first in the lower grades of the secondary school, thus allowing years in which to follow individual cases.

The alternative plan is to test one grade only the first year and concentrate all individual physical fitness work in this group. A new grade may be added each year. If this plan is followed, all junior and senior high school grades should be included in the program within a period of three to five years depending upon the rapidity with which the program is developed. If the beginning is made in the lowest grade it will be possible to follow-up the more dffiicult cases for several years.

Conclusion

As has been indicated in this article, physical educators do not conduct physical fitness programs alone. For the most part of course, it is a "physical education program," procedures being largely based upon modification of health habits, developmental exercise, and relaxation processes—*procedures the physical educator is well qualified to perform.* In certain cases, however—especially those that do not respond to initial programs—the cooperation of the entire health and physical education personnel, as well as other school officials, is essential for success. Home visits by the school nurse or physical director may be desirable to secure parental coöperation, especially if changes in dietary or other health practices are necessary or if the correction of physical defects is advisable. The advice of other specialists, such as physicians or psychiatrists, will be needed when the cause of the low PFI points to physical defects, organic lesions, or personality maladjustments. To secure this cooperation and to carry out each step of the program thoroughly and efficiently, even though the beginning be a small one, is essential for success.

Small-school physical educators, therefore, will do well to take steps at the outset to secure the needed cooperation. Even before testing is begun local physicians should be visited, the proposed program should be explained to them, and their coöperation secured. Naturally, the principal, school or district nurse, and phy-

sician, superintendent, and school board will be kept informed; and parents should be made well aware of and sympathetic toward the new program.

Finally, physical educators and administrative officers contemplating the introduction of this physical fitness program in their schools should not be disturbed by the hoary slur that "it is therapeutic" or "it encroaches on medical prerogatives." These typical sophistries have no truth in fact, and will have none as long as health continues to be an objective of educational effort. A convincing reply to criticisms of physical fitness programs in schools may be found in Part II of Lawton and Rogers' *Educational Paths to Virtue: I.* A humane reply is found in a Catholic Bishop's admonition to some 300 nuns of parochial schools in a central New York State diocese: "If necessary," he advised, "put aside even religious instruction to care for your pupils' health." It might be observed that even Jesus did this. . . .

Thus, PFI programs are arduous to conduct, which does not make them instantly popular with teachers. Their use implies that physical education is aimed at definite objectives, which lays their supporters open to critical attacks: whoever essays to *"do* something" is a fair target! But results repay all efforts.

REALIZABLE IDEALS IN SECONDARY SCHOOL PHYSICAL EDUCATION

DONALD D. DUNN *and* CLINTON S. LEONARD

THIS topic implies practicability. Hence, these remarks will concern only those ideals which either have already been realized, or are very closely approaching realization. Some of our comments may seem trite; others impracticable. But, in either case, they appear important enough to the writers to be regarded as ideals,—ideals that may be realized.

In the first place, all physical education and health activities should be coherently organized into a Department of Health and Physical Education where all members, — doctors, dentists, nurses, and teachers, — will be working together harmoniously towards well-defined practices and objectives, with all the work of the Department coördinated by a Director of Health and Physical Education. As commonplace as this may sound, there is still much to be desired along the lines of closer coöperation between health authorities and physical directors.

The personnel of the staff of such a coördinated department should be superior in training, character, and ability. In addition, the teachers of girls should be selected with a regard for their grace and charm, generosity of impulse, sympathy and charity—all feminine qualities. Men teachers should be, above all, erect, courteous, strong, courageous, purposeful, chivalric. The director of the department should be one who has had a broad background in teaching and organizing physical education and health ac-

tivities. Some actual experience in teaching classroom subjects should have made him more sympathetic to the whole school picture. The doctor should be one who not only has had training in educational methods and philosophy, as well as in medicine, but is also as vitally interested in the school children as he would be with private patients. There will be one nurse for each 1000 pupils in order to carry on the desired health service and health instruction. A physical education teacher for every 250 to 300 pupils will be needed to carry on, from morn till dusk, a broad and varied program of activities adapted to meet the individual needs of pupils.

While a good staff can do a good job under any conditions, it can do its best job under ideal conditions. Outdoors there should be *acres* of play space constantly occupied with directed activities, — space enough so that no boy or girl is denied opportunity to participate to the fullest extent. Indoors there should be not only gymnasia, but several auxiliary rooms for special individualized work and recreational activities. A full-sized locker must be provided every pupil; for, with everyone partaking in some intramural program, each will need this space to store, for instance, a football uniform, or tennis racquet, and clothing or golf clubs. Showers, adequate for every class, should be individually controlled by persons using them. Running a class through a centrally controlled gang-shower is, to our mind, comparable to leading a herd of cattle to slaughter, and a reflection on health instruction. In Scarsdale, for example, a suburb of New York City, each school is located on a plot of land of six to ten acres for playing areas, while indoors each school has a gymnasium—average size 50 by 75 feet—for every 300 pupils.

Health service should be built around the various examinations made by the nurse, physical educator, dentist, and doctor. And these should be complete, competently given, supervised in the giving, using standard testing apparatus wherever possible. Careful permanent records should be kept of all findings and follow-up work done. Through such a health service is one of the great avenues of personal health instruction and guidance, which should supplement the health instruction given to classes under the coördinating hand of the director of the department. Or, rather, the health instruction should supplement examinations and individual follow-up work. In fact, probably the best health instruction is of this nature.

In physical education there must be developed sound methods and techniques of teaching a broad curriculum, and scientific tests not only to determine pupil needs but also to measure pupil progress. As to methods, there must be, first of all, some means of grouping or classifying pupils according to their abilities, interests and needs. Scarsdale's first classification is chronological and by sexes—all the pupils of a given grade and for each sex meeting together. Then, *within each grade*, all physical education classes are divided into sections according to their Physical Fitness Indices. All boys and girls whose PFI's are *above the median for that grade* are placed in one section, while those whose Indices are below

the median meet in another section.

Within each section, too, there are still further groupings on the basis of PFI and SI scores and findings. This permits more homogeneous grouping, with a plan of work better fitted to meet individual needs. The above tests also provide an excellent means of measuring progress.

In Andover, Massachusetts, in making use of PFI tests, the following procedure works well:

1. Each boy and girl is tested when he or she enters school each year. The medical examination precedes all PFI tests.

2. As a result of the first medical checkup and PFI tests students are classified into four groups:

a. Those that cannot take PFI tests due to various conditions discovered by the school physician. Most of these are assigned to limited work and some to rest. This group is relatively small.

b. The groups whose PFI's are below 100 or above 180 are reexamined by the school physician. His recommendations are followed meticulously. In many cases parents are interviewed. This group must never be excused from regularly assigned periods of physical education, as physical care is usually their greatest need. This group is retested monthly—more often if the case warrants it.

c. Those from 100 to 115 are still below the school average, and are assigned to regular periods of physical education and encouraged to participate in the intramurals. (The average PFI of New England children is above 100. In schools where PFI programs are efficiently followed the average is between 115 and 125. In western states averages drop considerably.) If these pupils are found not to be participating in extra-curricular activities, they are assigned to such extra-curricular activities as should benefit them most.

d. All pupils with PFI's between 115 and 180 are permitted to take "regular periods" of physical education or they may participate in the intramural program, provided they are passing in all studies. If not, the usual physical education time must be spent on academic work. Teachers are encouraged to draw from this group for the various duties performed by the students around the school.

3. All athletes are given medical examinations before the season, which are followed by PFI tests. Results are reported to those in charge of sports with such recommendations as may be necessary to aid the individual.

4. Through this testing we are endeavoring to:

a. Create a healthy kind of "health consciousness."

b. Help individuals to understand their own health problems.

c. Find the best programs for each individual.

d. Provide ways and means for remedial procedures.

e. Allow each academic teacher "the privilege of understanding the physical make-up of her pupils."

f. Inform parents of their children's needs.

g. Acquaint school administrators and board members of what is developing—and why.

h. Coördinate the work of all school departments as well as classroom teachers to effect such procedures as will bring about the best health conditions for the individual."

After only two years of correlated PFI program and medical services the Andover school physician, Dr. Philip W. Blake, included the following statement in his Annual Report to Superintendent of Schools Sherman:

Bearing constantly in mind the fact that the child with a fundamentally sound body will make greater progress in his studies, our directors of physical education are achieving splendid results toward that end. They are constantly on the alert to discover and encourage the activities needed by the individual child for his best development; yet they are watchful also for the one who needs to go more slowly; and I wish it were possible for every parent to know and understand the methods by which this work is carried on. We have pupils who, to the casual observer, may seem to be of perfect physique, but by standardized tests prove to be weak and flabby in their muscular development, with their school work suffering accordingly. It is the aim of Miss Collins and Mr. Dunn to search out such deficiencies and help each child to a coördinated and well-balanced body, at the same time inspiring him to keep the gains that he thus makes. I can see that boys and girls are acquiring an interest and intelligence in health questions that cannot fail to benefit them in their adult life.

After-school activities provide opportunities for students to put into practice the various techniques and skills they have been taught in physical education classes. The after-school period, then, becomes a physical education laboratory period for practical experiments and experiences, much as the laboratory period in science is used for the work growing out of instruction in chemistry and biology classes. Our goal, then, is to provide a sufficient variety of individual and group athletic activities to afford an opportunity for every girl and boy in the school to participate. Naturally, then, our chief emphasis should be upon our intramural program, for it is here, rather than in interscholastic contests, that most pupils have opportunities for participation.

Following our policy of providing opportunities for the full exercise of initiative, leadership, followership, and responsibility under guidance, our athletic program, as far as possible, is student controlled. Student managers and captains actually handle much of our athletic program — and do it excellently, too.

Growing out of a broad intramural program are opportunities for those whose skills and abilities have become more highly developed to play with groups of similar ability in interscholastic contests. Boys develop representative varsity teams, the players of which have worked their way up through intramural and junior varsity games. In the case of the girls, however, interscholastic relations consist of various Play Days through the year. The teams engaged in these Play Days are chosen because of good conduct during the preceding intramural schedule.

Interscholastic relations broaden the scope of the program by furthering opportunities for socialization and character training. But many schools have lost sight of the fundamental educational objectives of athletics. This has produced keen and some-

times bitter interschool enmities, student unrest, bad feeling and upheavals. This spirit has gone so far that frequently one wonders if interscholastic contests are producing more undesirable and evil outcomes than good results. . . .

If a school arranges its schedules to meet schools of its class then its teams can—at least should—win only about 50 per cent of the time. And this is the ideal toward which *educators* in physical education should strive. In fact, to win much more than half of the time is far worse than to lose regularly: for winners can easily equalize conditions by using substitutes. . . . Obviously, then, the sooner we get away from the vicious objective of championships and undefeated seasons the better can we achieve the full educational values of our athletic program. As long as leagues, even though organized for other purposes, emphasize at all the importance of winning, that is, defeating opponents who are or should be "friends in play," they bring about undesirable outcomes. And since this usually happens in interschool league contests, we do not approve of leagues.

Conceiving interscholastic games as a proper part of the laboratory work of the school's curriculum, we encourage them. But we should not conduct interschool contests as exhibitions or exploit them for commercial gain. At Scarsdale, this ideal is actually put into practice. *At interscholastic games no admission is ever charged.* Athletics are financed from the same source as are all other phases of the curriculum. It is, we believe, as illogical to charge a taxpayer or student to witness an athletic meet as it would be to make that same person pay to see an experiment conducted in the biology laboratory.

Not being dependent upon gate receipts, Scarsdale is relieved of the necessity of playing interscholastic games on holidays and evenings. Thus, we avoid the "gate crashing" which inevitably accompanies admission charges, as well as other undesirable elements that follow around after public athletics every week-end.

We believe ours is a sane and reasonable attitude toward interscholastic athletics. We try to avoid emotionalized settings for games. We eliminate extraneous awards, such as sweaters and gold footballs. We are commendably free of community pressure to pervert our athletics from the educational objectives.

In summary, we aim for an interscholastic program with short schedules, with natural and equal rivals, played preferably on school days, as an outgrowth of the intramural program, conducted as an educational project, and directed always toward the physical and social welfare of each individual pupil.

CERTAIN FEATURES OF A DEVELOPING CITY SCHOOL HEALTH EDUCATION PROGRAM

JAMES J. CARTER

THE health and physical education program in the Quincy Public Schools presents certain features which may be interesting to the general reader and even stimulating to specialists to "go and do likewise."

1.

Perhaps of greatest significance is the fact that the programs reported hereafter are maintained on a greatly curtailed financial budget. The average per-pupil cost of education in 38 other cities in Massachusetts last year was $108, and "for the States," $104, while for Quincy it was less than $88. In spite of its very low cost of education Quincy supports several features found only in more advanced schools; for example, expert guidance service, complete shop courses, unusual music instruction, and others, as well as the health and physical education program to be described hereafter.

Thus, Quincy is far from a "wealthy community" in school expenditures. What has been accomplished is due largely to the administrative genius of Superintendent James N. Muir and a hard-working staff of teachers, supervisors, and office assistants.

2.

Conforming to ideal administrative procedure, all health, physical education, and recreational activities in Quincy have been coördinated under the direction of a single person—the Director of Health Education. Included are programs in 25 schools including a Trade school, two senior high schools, four junior high schools, and seventeen elementary schools.

The staff looking to the Director of Health Education for guidance includes two full-time physicians and one part-time (woman) physician, four nurses, two health service workers, ten physical educators, and 31 recreation leaders or coaches. This staff is relatively small, particularly in physical education, which necessitates curtailment of much individual corrective work which ought to be done. 14,000 pupils need much more individual attention than can be given by ten full-time instructors, even with the assistance of 31 recreation leaders. Nevertheless, very much is accomplished, as will be shown below.

It should be stressed that the resources of medical and nursing staffs are closely coördinated with those of physical education and guidance, particularly through the Director's office. Admirable harmony and excellent cooperative relationships exist, which are, after all, indispensable to any efficient health service to health pupils.

3.

A prime feature of the Quincy health education program is testing. For example, in 1938 over 16,000 medical examinations were given. Nor were these of the cursory type sometimes provided in American schools. Pupils are undressed to the waist, shoes are removed, and enough time is given to each pupil to insure a

thorough check on superficially observable deviations from normal. Athletes are given chest X-rays as well as special examinations at the beginning of each season.

Last year 13,000 hearing tests were given, using the phono-audiometer. Classroom teachers and nurses are taught to give these tests. Over 300 hearing defects were recorded.

Last year 1000 vision tests were given using the Betts telebinocular instrument which detects nine different kinds of eye defects. This method is greatly superior to the old Snellen chart which measures merely visual acuity at twenty feet.

Nearly 6,000 PFI tests were given in junior and senior high schools in 1938. The severely curtailed physical education staff was able not only to give these tests, but also to make many individual adjustments of activities.

Tuberculosis tests were given by the Norfolk County Clinic to over 2,000 pupils in grades seven, nine, and eleven. (It is unnecessary to test younger pupils.) Of these, 185 reacted positively; 362 were given X-rays.

The City Health Department made nearly 3,500 dental examinations of pupils in grades one to three.

Individual health services provided are of several kinds and for large numbers of pupils. The reader who merely scans our records may be shocked to discover that American school children have so many health deficiencies. Nevertheless, we have yet to locate and treat adequately more than a fraction of the deviations from normal health which must affect adversely the learning efficiency, happiness, and social adjustability of pupils.

Perhaps, most seriously, over 1,100 cases of communicable diseases were reported during the year and appropriate actions taken by the School and City Public Health departments. Nurses gave individual health advice to 3,600 pupils. Parents were notified of 2,500 defects of pupils. Nurses followed these up, securing 1,400 corrections during the year.

5.

A special Body Mechanics Room has been equipped and staffed at North Quincy High School for pupils most needing guidance in physical activities. If this room were duplicated in each school a splendid health service would be provided, which would greatly raise the average physical fitness of children throughout the entire city, increase their academic proficiency and social behavior, probably reducing costs of illness in the community, as these children become adults and parents.

From this one room the following record of improvement is illuminating:

North Quincy High School		*Physical Fitness Indices*	
Grade	*Number of Pupils*	1938	1939
12	26	76	94
11	20	81	105
10	36	78	96
9	24	72	89

The School Department effects cooperative relationships with every other available city or Metropolitan District health agency. The following services are regularly utilized:

A. City Clinics
   1. Child Welfare, every Thursday.
   2. Habit and Speech, every Thursday.
   3. Orthopedic, one each month.
   4. Infantile paralysis, every Monday.
   5. T.B. Clinic, Tuesday evenings
   6. T.B. Clinic, each year tests given in schools.
   7. Dental Clinic, Pre-school Wednesday and Thursday mornings.

B. School Clinics
   1. Dental Clinics, daily mornings, except Saturday.
   2. Dental Hygiene, daily afternoons except Saturday.

C. Metropolitan Clinics (Greater Boston)
   1. Forsyth Dental Clinic.
   2. Tufts Dental Clinic.
   3. Harvard Dental Clinic.
   4. Massachusetts General Hospital.

D. School Coöperating Agencies
   1. Guidance and Research Department.
      (a) Head counsellors in each school.
      (b) School adjustment services.

One example of coöperative health services illustrates what is done for Quincy children. Last year 1,765 pupils were sent into Boston for Forsyth Dental Clinic services. These are provided for needy children. In practice, a school nurse arranges for a bus-load to make the trip, the bus being supplied by the School Department. Children are asked to pay 75 cents for transportation and do so if they can afford it. Many, however, are given this service free. Pupils are notified, the bus picks them up and, under the supervision of the nurse, they are transported to the Clinic. There children go immediately to separate chairs where their dental needs are immediately cared for. (The Forsyth Clinic has 75 chairs.) They start home within the hour. Last year, 1,472 pupils were given prophylactic services and 293 had extractions and fillings. Ten cents each is charged by the Clinic for services.

6.

The Quincy School Adjustment Service is a unique method of adapting education to each pupil's abilities and health. In practice, any pupil having trouble — academic, or social behavior, or whatever—is brought to the attention of the Guidance and Research Department whose central office adjoins that of the Director of Health Education. There all records and reports on the pupil are assembled. Of perhaps greatest value —and certainly of first importance— are the health records. These include particularly the following:

Medical examination
PFI test results
Hearing test scores (phonoaudiometer)
Vision test scores (telebinocular)
Nurse's reports of home conditions.

In addition the following are utilized:

IQ test scores
Academic records
Teacher reports.

These records are analyzed. If necessary, re-tests are given to check the accuracy of the first tests. The pupil is then called in for a conference. The Adjustment Officer then makes his disposition of the case, which may range from curtailment of some particular study to complete revision of all school activities.

7.

Efforts are constantly being made to render physical activities educational in every sense. We would stress the following:

(a) Medical examinations and PFI tests are given to all junior and senior high school pupils before any formal sports programs are conducted. Tuberculin tests also are given to participants in formal after-school sports; and chest X-rays are taken of all positive cases. Pupils showing low PFI's or other health deficiencies are discouraged from participating in strenuous sports.

(b) We constantly emphasize the place of interscholastic sports programs as merely the apex of a pyramid of development. The "base" is represented by instruction in skills, techniques, rules, and conduct of activities — with health development the "guiding star." On the second level, recreation is stressed through skills and knowledge of how to use them. On the third level are our intramural and class athletics. The peak, then, is interscholastic contests. With us this is "merely" the peak.

(c) We are alert, too, to prevent the giving of special awards to victors in contests. Rather do we stress using monies to purchase uniforms. We avoid "championship contests" wherever possible and give no sweaters.

(d) By providing a wide variety of sports no one type receives undue emphasis. Varsity sports are conducted in:

Football	Grades 9-12
Basketball	" 7-12
Baseball	" 7-12
Wrestling	" 10-12
Track	" 7-12
Cross Country	" 10-12
Ice Hockey	" 10-12
Tennis	" 10-12
Golf	" 10-12
Soccer	" 7-12
Riflery	" 10-12

Intramural and club activities are conducted in the following sports:

Archery	Leaders' Club
Badminton	Ping Pong
Baseball	Winter Sports
Basketball	Sailing
Bowling	Soccer
Deck Tennis	Swimming
Field Hockey	Tennis
Hand Ball	Touch Football
Horseback riding	Track
Horseshoes	Wrestling

Believing that sports should be taught which may be followed in adult life, we in Quincy have sponsored what is perhaps the first high school sailing club in the nation. Quincy is singularly favored by having a salt-water-front of seventeen miles and a bay that is not only inclosed but also has fairly steady and frequent breezes.

Within the last three years this sailing venture has grown so that today it is sponsored in two high schools. Five classes are conducted, *during school hours,* in sailing, piloting, navigation, and seamanship. Over 200 pupils are regularly enrolled.

We have steadfastly set our faces against "school credit" for these courses.

Leading this sport is Mr. James Le Cain, a former varsity coach in football, basketball, and baseball. Mr. Le Cain now "reaches" many more pupils than formerly, in a more healthful and otherwise character-building way.

The club has the use of Mr. Le Cain's 36-foot sloop, twenty private sailing craft, and occasionally some fifteen others owned by pupils not yet in the club. Four yacht clubs in Quincy coöperate in teaching and providing facilities for the young Corinthians. In the near future we hope our high school athletic associations will own a fleet of small boats for intramural contest.

9.

The care taken to insure proper educational conditions is indicated by the conduct of ninth grade football. First, this sport is not permitted to seventh and eighth graders. Second, no gate charges are made for attendance in any junior high school contest. Third, complete uniforms are provided in football not only for the high school varsity squads, but also for every ninth grade player. (There are over 400 complete outfits owned by the School Department and used by pupils).

But of equal importance are the following: the ninth grade "schedule" between the city's four junior high schools is limited to three games for each school during the season. No "outside" games are played. Pupils practice several weeks before any formal game is played. Coaches are not permitted to interfere in any way with the conduct of games by referees. Five-minute periods are played. The Director of Health Education attends all contests to supervise their conduct.

10.

We have only made a beginning in our health and physical education program in Quincy. Health teaching needs further development. Many corrective rooms still need to be opened and staffed. Follow-up services are still less than 65 per cent efficient. We have yet to equalize efficiently the playing powers of opposing teams in sports. As in practically all other American school systems, academic teachers are not yet fully informed concerning the relations between health and learning, or concerning manifold health development functions in classrooms.

On the other hand, the progress made already probably compares favorably with that in most New England cities. The keys to our modest successes in Quincy thus far are probably four. (It should be noted here that Quincy's coördination of health and physical education services was instituted in 1936).

First, is the centralization of responsibility in a single director responsible only to the Superintendent of Schools, and with authority and prestige subordinate to no other school official. Whether the director be a nurse, physician, physical director or former principal is not important. It is vital that he or she have an educational viewpoint on all school health problems.

Second, our work is based on tests and re-tests, to discover needs and check the effectiveness of programs.

We use standard tests wherever possible and mechanical measuring instruments, which can be scaled, calibrated, and used objectively. Dynamometers, spirometers, telebinoculars, phonoaudiometers, and stop watches take the place of guesswork. They yield scores in numerical terms which have definite meanings.

Third, we utilize every available facility,—school, public health, hospital, clinic, private playground, and even commercial. The community is the great Schoolhouse for our pupils, and the entire population is our Teaching Staff. Parents, editors, private physicians, luncheon and service clubs, and parent-teacher officials are our aides, as well as the entire teaching force of the School Department.

Finally, our objectives, we believe, are definite, clear-cut and worthy. Elimination of physical defects, avoidance of disease, health development, physical fitness, courtesy, coöperation —these are repeatedly stated by administrative officers and our progress is checked in terms of these aims.

MEETING ASSOCIATION AND CLUB MEMBER'S HEALTH NEEDS

ALAN E. BRESSLIN

NEVER in history has there been so great a need for educationally sound health programs as at the present time. There are so many contributing factors which are constantly undermining the health of individuals that it seems almost an impossibility for any health program to succeed. Social and economic transition, vocational insecurity, national and international strife are but a few of the factors that discolor lives in present-day civilization.

Perhaps most demoralizing, by the present-day mode of living man has been led to believe that health is secondary to other factors in his living scheme. This neglect of health is well described in a recent *Mayo Clinic Proceedings,* which says in part, "Man spends approximately the first twenty-five years of his life in preparation for maturity, to learn a trade, an occupation or a profession. When this preparation is achieved successfully, the daily round demands increasing application, activity and responsibility, and the stress and strain contingent on the constructive execution of the daily program are increased. Man grants little consideration to an equally important period of preparation, that for the post prime years of life when modification in his mode of working, and living, are exacted by the inevitable biologic law. Only too often man believes himself immune to nature's scheme (a few appear to be) and relentlessly carries on with ever-increasing industry until some vital structure fails and sudden dissolution or pathetic invalidism results."

The problems that confront health educators today are, then, how to combat causes of ill health and, what is just as important, how to help club members who come to you for help, to regain their health.

There are many kinds of physical

education programs that presumably help individuals to gain back their lost health. However, upon close observation many of these are doing little or nothing toward helping any particular member regain even a portion of his health. This is a serious indictment of "Y" service and must be met if Y.M.C.A.'s are to continue to deserve support.

In order to be a positive benefit, a health program must first be educationally sound. The program must be based upon facts gained by years of experimentation. Second, the director himself must know how to administer this basic program, must *believe* in the program. He must be so enthusiastic about the program that he will sacrifice all else to discover and meet the physical needs of his club members, and secure proof that under the director's guidance the member is improving in health.

It can readily be seen that in order to do this, a program must be carefully planned and executed so as to insure, as far as possible, basic scientific data on which to proceed with the program. But first, the director must seek to know the actual physical condition of each club member before attempting to prescribe remedial work. This is accomplished, primarily, by a thorough physical examination administered by a competent medical doctor. This examination should include tests of heart, blood pressure, pulse rate before and after exercise, eye, ear, nose and throat examinations, a thorough posture examination with the use of shadow-silhouette pictures, foot examination, hernia examination, and, if prescribed by the examining physician, a uranalysis. The findings of this examination should be thoroughly studied by the health director and examining physician. Any physiological or anatomical deficiencies should be noted and the health director should act to help only these cases recommended by the examining physician.

Both the "Y" health director and examining physician should work as a team segregating the normal from the sub-normal.

Many health club officials believe that the medical examination outlined above is sufficient to indicate proper methods of procedure. But how can the director tell what the fundamental physical powers of each individual are by merely looking at him? The physical examination is only a preliminary step to another test which should determine each individual's "physical fitness" or capacity for sustained physical activity. If this is not done, how can the director know what and how much exercise to prescribe? The director must know the physical condition or power of each individual; otherwise he will blunder around and bluff through a program that should not be allowed to exist. "Know thy man," is the first law of a good health program.

To determine the exact physical condition of an individual requires that he be subjected to physical fitness tests. Only men certified by the examining physicians are allowed to take this test. Those who have hernia, pathological hearts, etc. should be segregated and given special exercise under the direct guidance of the medical doctor.

From the results of PFI tests the health director can proceed to pre-

scribe exercise, rest, or any other remedial activity that will help the club member meet his particular health need. As a result of these tests the director *knows* the health needs of each individual and therefore is in a better condition to alleviate these needs.

The most important part of the health program, however, is the subsequent PFI retests at periodic intervals which determine the *progress* of the individual. These retests should not, ideally, be less than a month, or more than three months, apart. Each retest should be analyzed and compared with the previous test or tests.

Members should be segregated according to their PFI scores. Those below 100 should be classified as "low PFI's" and be given individual work in order to increase their physical fitness. Those men whose PFI's are from 100 to 150 are classified as normal and should be allowed to participate in any recreational programs. Those men whose PFI's are over 150 should not be allowed to participate in heavy gymnastic work, but should participate in light recreational work. It is just as important to decrease the high PFI's as it is to increase the low PFI's.

It can readily be seen that through this testing program the health director can adapt his program to the health needs of each individual club member. Through the re-testing program the director can determine what results he has obtained in meeting the health needs of the club members, and also give the club member a powerful incentive to continue his health remedial work.

This whole testing program is not a new program in its experimental stage, but it is a program proven to be reliable beyond doubt, by thousands of tests, and particularly in Y.M.C.A.'s. As a result of this recommended program the health director will find the health needs of club members varied and probably individualistic. Some members will need individual work, others group work, others light recreational work and still others rest and no work.

One must remember in dealing with the health needs of people, that the causes of ill health must be determined before advising reconditioning activities or change of diet of any kind. It can readily be seen why the health director must secure this information. The causes may be obvious, or they may be remote. The causes may be mental anxiety, home conditions, work conditions, insecurity of work, or physical laxity due to improper diet, improper exercise (or no exercise at all). Many other contributory factors will be found as causes of poor health. Many causes, like functional or organic disturbances, must be referred to the medical examiner. The health director should work with these individuals upon prescription by the physician.

A health program can be measured only by its values to club members. Club members will not derive any positive benefit from a program built upon unsound, uneducational principles. Only when a club program can positively show the members they need health guidance, and furthermore, by scientific proof, show the members the improvement they derive, will the club be beneficial. Then, and only then, will the health director have a program that he knows will make club members healthier and consequently more happy for having joined the club program.

THE PFI IN A PRIVATE BOY'S SCHOOL

EDWARD GODFREY

HAWKEN School, a private country day school for boys from the first through the tenth grade, situated in Cleveland, Ohio, is a school of "Small Group Education," by which we mean "definite and complete consideration for the individual." From the "Small Group Education" standpoint we find PFI tests and scores to be a vital part of our individual cumulative physical examinations. Our complete examination includes health history, record of health habits, medical examination, postural observation examination, and anthropometric items, including particularly PFI tests.

We do not expect or try for startling overnight results in our physical education programs. We do believe that the proper physical development of a boy must be a matter of continual vigilance over the years. During growing years, and particularly between the ages of ten and sixteen, there is vital need for complete, periodical measurements of boys' development. Measurements are needed as guides in outlining physical activities both for proper development, and perhaps most important, to promote individual initiative. This is accomplished with PFI tests to a great extent, as they yield capacity scores for all the important muscle groups; moreover, the score itself is something you can show to a boy, and explain understandably, because of the numerical rating, how, why and how much he is gaining or losing in physical powers. In other words, the PFI proves to him that the program of activities he has been following is really worth the effort, and spurs him on again just at the point where he might otherwise have been ready to abandon the effort he was making *just for want of proof of its value.* "Proof of its value" is often difficult and sometimes even impossible to recognize — even for the director himself, and certainly without the use of PFI's. Consequently, "the ghost was given up" long before the complete task had been accomplished — before we used PFI tests.

Fortunately, PFI tests are easily and quickly given in private schools. We call them into use many times during the year, besides the regular testing period. Sometimes PFI's are used as life-lines to drag back to "physical development safety" fellows who are not "doing a good job on themselves." Often, too, PFI scores are used to prove to the boys that they are on the right track; and of course teachers and principal refer to them regularly to check our own programs for individual boys.

Our physical education program at Hawken School is divided into two phases. The first phase includes the complete examining, and an extensive amount of individualized preventive, corrective, and developmental exercise. The second phase emphasizes group activities, in which each boy is introduced to a number of sports, and definite skill development is striven for in some major sport each season. He is given the needed experience in contests, too, *within the limits of his*

own physical capacity. Here, too, we have the opportunity to drive home training in such vital experiences as being a good loser, a gracious winner, team coöperation, and fair play.

In Hawken School we guide our entire program by continual reference to the results of our individual examination records. The medical items are given first consideration. If no limitations are shown in these, we refer to other examination records, particularly PFI's.

Our first consideration is to improve all individuals with low PFI's. Consequently, a high percentage of our pupils gain steadily in physical fitness. This increases the physical capacity of our total enrollment. Thus, in the school year of 1935-36, 69 per cent of our boys had PFI's under 80. (This includes only boys ten years, six months of age, and older.) In 1936-37, 34 per cent of our boys had PFI's under 80. The next year, 1937-38, 27 per cent of our boys' PFI's were under 80. In 1938-39 the per cent under 80 was only 17. This year but 2 per cent were below the 80 mark. So much for boys definitely deficient in physical fitness — *capacity* to work, study long hours, play happily, become good citizens. Now consider the "lower middle" group. Five years ago only 6 per cent of our boys had PFI's scores of 100 or over. The next year, a rating of 100 or better went to 35 per cent of our boys. In 1937-38, it was 41; and it was 43 per cent in 1938-39. This year we have brought the percentage up to 61. Thus, in five years from 6 per cent to 61 per cent of our boys have been raised in physical fitness from below to above norms established for all boys *of their own ages and weights.* Remember, too, that these boys come largely from well-to-do or even wealthy homes in which indulgence is likely to be the rule.

The percentage of our boys having PFI's of 120 or over—the superior group—includes no one making that score the first year, while 16 per cent scored 120 or more this year.

Look, now, at a particular group. The average each year of our *tenth grades* for the last five-year period are as follows:

Average PFI of tenth grade—

1935-36	82
1936	97
1937	108
1938	108
1939	112

The ninth grades have made the following progress:

Average PFI of ninth grade—

1935-36	73
1936	87
1937	98
1938	105
1939	109

The group of boys who are tenth graders this year had an average PFI of 82 in the school year of 1935-36, when they were sixth graders. The next year, as seventh graders, their average fitness went up to 94. In 1937-38 it was an even 100. Last year the average PFI was 105, and this year, as tenth graders, they have an average of 112.

Taking another cross-section, the yearly PFI averages of all individuals who have been in Hawken School continuously for the entire time this program has been in full operation,

and were, at the beginning, ten and one-half years of age or older, were as follows:

Total average PFI—

1935-36	73
1936	91
1937	99
1938	104
1939	112

These group statistics, and many more, not only prove to us the value of our physical education program, they also show us, from term to term and for individual boys as well as classes, where we need to "apply pressure," and where changes are needed to gain and maintain desirable standards. They speak for themselves when we find an individual below the group average. No boy wants to be in that kind of "dog house," so to work he goes! We find the PFI the finest "interest creating" instrument imaginable.

Now let us review one or two individual cases.

First, consider case "A." This boy, at the beginning of the school year 1935-36, was just past ten years of age. His PFI was 68. His weight was normal. His medical record was good. He had had, a year or so before, some trouble with his eyes, which was cleared up by an oculist's treatment and prescription for glasses. His coördination was very poor.

We went to work with this youngster, and his development proceeded satisfactorily. The next year his PFI jumped to 97, and the year after, to 106.

The following year his P F I dropped back to 87. We checked and re-checked. His medical examination report was "OK," he had no postural defects. He was then a little over thirteen years old, a few more pounds over average than he had been, and was growing rapidly.

Our analysis was that this boy was in the third period of "spring up" and puberty. He had the poundage; and with lots of rest we decided he could take plenty of exercise. We watched his weight and PFI, therefore, with great interest. As long as he had plenty of rest, his PFI increased. As long as the PFI increased, we knew he was getting the required rest and could keep up his work. But whenever his PFI declined, we decreased his work until he caught up on his rest.

This boy now has a PFI of over 120, and is in beautiful physical shape, due at least partly, we believe, to the close individual analyses and follow-up work made meaningful by proper physical tests. During that age boys must be watched very carefully, and their exercises guided with the utmost caution. The question "What is the best physical program for boys between eleven and fifteen" is a complicated problem. Teachers need every available aid to guide them in their assignments of activity or study for each individual. To us at Hawken School it is a certainty that if we had not had the PFI check on this boy, for instance, he would not have the physical development he has today. There was really nothing else to guide us in scientific administration, guidance, teaching, prescription of program—call it what you will—of the proper kind, and especially the correct amount of exercise this boy should have.

This is a typical case of what must

be done to check guidance in the perfection of physical development in growing boys.

Case "B." This boy, at the age of nine, had a very low PFI,—very poor feet and legs, and was unhappy over his poor coördination — his lack of ability in athletics.

To make a long story short, when his foot defects were corrected and his leg lift test improved, his PFI increased over 40 per cent, and with it his athletic ability, and, not to exaggerate, *much improvement in his "social happiness."*

Now he has a PFI above 140, and prospects of some day being an outstanding athlete. His troubles were very definitely found and corrected by correlating the findings in PFI tests and posture records.

Here is something different: Case "C", a common use of PFI findings. This individual's first score was above 100. In a three-year period he increased his record to a high score — above 130 — but his general outward appearance was not that of a "strong man." His natural tendencies, however, were toward physical activities that would add to his development along that line. But he was not apt at learning sport skills, and, therefore, shunned participation with others in athletic games. Without the PFI to guide his development he would have confined his activities only to the "weight lifter" class. In other words, this boy had gained satisfactorily in physical power and needed only to be guided to *use* that power in popular sports. His time, therefore, was not thereafter used in developing muscle power, but in skill development, muscle elasticity improvement, and postural correction. The muscle elasticity and posture correction then improved his body mechanics, while the skill development added to the enjoyment and profit of his undoubted superior physical powers.

These are just three ordinary cases. Our files are full of such records. Probably some cases are more startling; but we believe each individual's record to be a valuable and fascinating story.

In closing, I must relate the splendid confidence one gains in being able to quote scores such as PFI's when talking to parents. One can then drive home one's points, and secure full coöperation from administrators, pupils and parents. If one is allowed to dream, it may be permissible to think of some day finding the average PFI of a large percentage of a given school ranging between 135 and 150. That group would be superior in health, show a splendid attendance record, and ought to be extremely rapid in learning physical skills. Would this make better students and better citizens? Our other records show this to be practically inevitable.

CAMP FIRE GIRLS: A HEALTH PROGRAM IN CAMP

MRS. J. VERITY SMITH

HEALTH objectives in a girls' camp and the methods employed are of first importance to the campers and to the parents who send their offspring for a vacation of rest, physical development and instruction in out-of-door activities. Since the development of health is one of the three fundamental principles on which the Camp Fire Girls program is built, it is therefore natural that we, in the Camp Fire Girls camps, should do everything we can to foster and train our girls in good health habits.

In order to attain these objectives, it is necessary to have a well-situated camp with good physical equipment, hospitalization facilities, a resident doctor and trained nurse, a well-operated dining room and kitchen, and a well-balanced diet. Parents expect these requirements in the camp of today. However, these essentials will not bring about the physical vitality, poise, and strength which we desire, unless we are interested in the health and physical fitness of each individual camper—and unless we treat her as an individual, modifying her own camp program to meet her peculiar needs.

Physical stability is necessary to the proper development and growth of our girls, for they are the "mothers of tomorrow"; and it is important that we, as educators, should do everything possible to promote sound health practices toward the building of that well-integrated, well-developed adult.

We know that the home, school, camp, environment, the spending of leisure time and many other factors enter into this complex growth of an individual; but we know full well that good health is fundamental! Schools and camps are doing excellent work with health programs, and our Boston Camp Fire Girls Camp has found theirs of value to campers. What follows is an outline of our programs for the Camp Fire Girls of Boston.

When a girl registers for camp she is sent a health card which we ask to have filled out by the family physician a few days before entering camp. Her medical history, including contagious diseases and operations are recorded, and a physical examination is made. When the camper arrives at camp our own camp doctor examines her for contagious skin and throat infections, heart and general health. The nurse weighs and takes the height of the camper; and these are likewise recorded. After passing her medical examinations she then proceeds to the waterfront for swimming classification. A few days later she is given the PFI test. (The ideal is to give PFI tests the second day at camp.)

We particularly favor PFI tests, for they give us an immediate objective and accurate report of the actual physical condition of the individual; and we then can arrange a program of rest, activities, and diet for each camper who needs special attention. Thus, we know at once that campers who have low PFI's should be assigned to good, strong counselors, for,

almost always, these are problem campers.

At the end of two weeks in camp retests are given, and again at the end of the camping season. These retests are of great value to the director as well as to counselors. We have, in comparisons between scores, trustworthy evidence of the effects of programs, for a steady gain in strength and weight of campers, *as a group,* shows her that the program is well-balanced and not too intensive. Moreover, we are able accurately to gauge the tempo of the camp program from results of tests. If, for example PFI's go up too rapidly, we know counselors have been driving girls too hard—a common error among young, ambitious adults everywhere. We require an hour of complete rest by all counselors and campers; and this is a tradition we adhere to.

Over the four-year period since introducing the PFI tests we have had many interesting cases.

For example, how often emphasis is placed upon "gain in weight" as proof of achievement! Parents often think it proof of improving health; but it was an illusion in Betty's case. Betty has been in camp for four years. She has always been very active, exuberant, emotional, and noisy. At the age of twelve she weighed 125 pounds, height 65 inches, and had a PFI of 124; at the age of thirteen she weighed 154 pounds, height 68 inches and had a PFI of 77; at the age of fourteen her weight was 174 pounds, height 69 inches and her PFI was 54. That summer we recommended a metabolism test, and that her activities be reduced and her diet watched. *This was in spite of a clear health report by the family physician.* Moreover, her mother argued with pride that Betty's teacher had reported that "She was the strongest girl in her class" and that she herself thought "Betty was healthy and would be all right." When Betty arrived in camp last summer with her camp medical card, it was reported that a metabolism test had just been made, a heart murmur had been detected, due probably to the overtaxing of her strength in school; and a program of mild activity and careful diet was recommended. Her mother was very apologetic and wished she had followed our advice sooner. We really should have followed-up Betty when we found her PFI dropping to 77, but our confidence in certain PFI records was not as positive then as now.

Another interesting case is that of a girl of twelve who had a very low PFI of 63. Louise was in camp eight weeks, and during that time she complained of not feeling well, her appetite was poor and she would not exert herself very much. Because of her low PFI the camp doctor watched her all summer, and Louise was given extra milk. Her PFI improved twenty points, while her weight dropped two pounds. One week after camp closed she was operated upon for acute appendicitis. Fortunately for the camp as well as for Louise she was prepared, during the summer, for the inevitable operation. Had we not known her precarious condition almost certainly the acute condition would have come earlier—when she was weak and tired, with what results the reader may imagine. Louise attended camp all last summer, her PFI was normal and her general health was excellent.

On the opening day of camp two years ago, Helen arrived for eight weeks. She was a pale, baby-faced girl of sixteen and appeared youthful for her age. Her medical history reported a great deal of sickness during childhood. Consequently she had been kept back in school and was several years below the standard grade for her age. She had built up excuses of sickness for everything; and her mother was sympathetic to them. Helen excused herself from the first PFI tests and from everything active except horseback riding. Twice a week regularly she was well and ready for her ride, though her parents could ill-afford this luxury. Two weeks passed, the doctor had listened to her ailments and finally advised putting her to bed for a week's rest. The PFI tests were being given and the director suggested that Helen be given the test first. Her PFI was 123,—which proved her to be a superior physical specimen! She needed a program of exercise, rather than a week in bed. Being almost driven to activity, during the summer she learned to swim, to paddle a canoe, to play tennis, to eat properly and to stop whining. When she left she was a different girl, her flesh was firm and pink, she had a sparkle in her eyes and she had learned and experienced the joy of living by doing something worth while.

The large majority of our campers are normal girls with normal PFI's. We find that with slight changes in the camp program we can build a reserve of physical vitality and create poise, which is gained only through self-control, rest, proper exercise, and good food. The PFI program makes an excellent camp director's measuring stick for guarding against fatigue and an invaluable strength measurement for the camper. This measuring stick is equally successful in schools; and it is intriguing to wonder what might be done for children if school and the camp coöperated to the extent of passing on to each other their PFI reports. . . .

COORDINATING SUMMER CAMP PROGRAMS TO ACHIEVE HEALTH OBJECTIVES

JOHN BADEN MALCOLM *and* JAMES A. WYLIE

IT is generally accepted that the primary function of camps for girls and boys is the development of their physical, mental, and social health. Since, with the possible exception of pathological cases, mental health and social adjustment are directly dependent upon good physical health, this report will deal specifically with ways and means of coördinating the camp program in order to assure improvement in the physical health of each camper. It has been shown repeatedly for most children, that, as their physical health improves their mental and social health develop concurrently. We define physical health as "capacity for sustained physical activity."

Assuming that each camper has received a thorough physical examination at, or as near as possible, the time of entering camp, the first step is one of determining the specific health needs of each individual. These individual needs are discovered by means of:

1. Health histories
2. Physical examinations
3. Personal interviews
4. Physical fitness tests
5. Skill and coördination tests
6. Medical examination (laboratory tests, sensory tests, etc.).

Camp directors are already aware that girls and boys enter camp in all states of physical health, and therefore that the physical needs of the individual campers vary considerably. These may be classified under the following:

1. The need for medical care
2. The need for muscular development
3. The need for nutritional balance
4. The need for rest and relaxation
5. The need for skills
6. The need for friendship and social approval
7. The need for social adjustment

That these classifications are interrelated is obvious. In fact, abilities to gain proper approval and to adjust socially are definitely related to the acquirement of skills; and the acquirement of skills is definitely related and dependent upon muscular development, nutritional balance, and the organic condition of the camper.

In order to determine individual health needs of campers it is necessary to use valid measurements. For this purpose we have chosen physical or medical examinations and the PFI.

In this connection it is essential to understand that, almost invariably, low PFI scores are found when physicians report medical defects; moreover, low PFI scores are evidenced in most instances long before the cause of the low PFI is discovered by routine medical examinations. In such instances, the PFI becomes a "screening" test, *for campers with low PFI's should be re-examined by the camp doctor or their family physician.*

Camp physicians and medical advisers to camps who have observed and taken part in this program during its actual operation approve of the use of the PFI as a means of screening the campers. Doctors acquainted with

the tests give more careful examinations in the first instance in order to coöperate better with the PFI testing procedure.

In "screening," the PFI is used in the following manner. Those campers whose PFI's fall in the lowest quartile, or at any rate are under 85, should be re-examined by the camp physician to determine, if possible, the causes of their lack of vitality. Guided by the revelations of this re-examination a program to meet the needs of each individual should be planned. For example, the fatigued and the over-active always need more rest, which is provided through special rest periods, earlier retiring hours, and opportunities for sleeping in the morning. The undernourished may need more or specific kinds of food at mid-morning and mid-afternoon. The over-weight may need treatment for glandular disturbances and such aid as "the training table." In some cases conferences with parents and family physicians may be necessary in order that further examinations and advice of a medical nature may be given.

Very important also are those cases of boys and girls whose PFI's fall in the upper quartile. Most of these children are prone to be over-active physically and should, therefore, be guided into a program which will curtail their desire for too much physical activity. These campers should be interested in the handicrafts, nature study, drama, and such activities as will better help them to relax.

The middle 50 per cent of the campers should take part in a regularly set up camping program. Camp directors, however, will find it to their advantage to organize their leagues, intramurals, and other contests on the Strength Index basis. Experience has proven that more girls and boys will take part, and their enjoyment will be greater in games and athletic events when their physical powers are equalized using the Strength Index rather than by any other method.

Nor are such adjustments impossible to effect, as camp directors may easily imagine. For proof we simply observe that they *are* made in the camps reported on—one being a Boy Scout camp, the other a Y. M. C. A. camp to which many boys come for only two-week periods. Every two weeks new groups come, are tested, are retested, and leave, while many remain for varying periods.

It can easily be understood that administering this type of program to meet individual needs necessitates the close coöperation of all counselors and staff members. ***For each counselor and staff member must be acquainted with the specific needs of each individual camper.*** This can best be accomplished by a conference of staff members and counselors immediately after PFI and other tests have been completed. For example, the waterfront director should know what girls or boys need waterfront activity for the development of strength and skills, and should find ways and means of interesting these campers in this project. Drama, handicraft, and nature study counselors should similarly become acquainted with those campers who are not only lacking in these types of interest but who should also develop interests in these activities in order to conserve their energy. And so on!

If even one counselor fails to apply the suggested program for an individual the results may be seriously affected. For example, if a camper needs additional rest but dislikes the assigned rest periods the counselor may possibly "forget" about the assignment. Should this happen much of the health value of camping will be lost for this girl or boy. This also holds true of exercise, sleep, meals, recreation, and other camp activities. This example illustrates the considerable inefficiency of camp programs neglecting medical and PFI tests and adapting camper activities to needs so discovered.

It must be emphasized that the administration of medical, PFI, and other tests does not in itself constitute a program. The fundamental requisite to secure health development is a *program* that each girl or boy participates in, and is adapted to his or her *individual* needs. Since each camper is a unique individual any given program will affect different children in different ways. Therefore, the director and counselors must have an intimate knowledge of the changes taking place in each girl and boy in their charge. The only reliable or safe method to determine these changes is by testing each camper at regular intervals. Retests should be given in camps at two-week intervals. This enables directors and counselors to make intelligent re-adjustments in the program each two weeks for any child not responding properly.

This practice of testing, providing individual programs, retesting and, if necessary, changing the individual's program every two weeks is of tremendous interest to campers and is of even greater concern to camp directors. It fascinates parents. It requires no artificial stimulus to interest either a parent or a camper in health. Once campers or parents know the camper's health status and have frequent re-measures both are eager to know what changes take place. When progress fails to evidence itself, the camper is willing to accept advice on how to become healthier. Under these circumstances the child seeks proper knowledge and actually changes his — or her — habits. The counselor then finds his teaching taking greater effect. This self-interest revitalizes the health objectives. The camper is looking for it—not "ducking" it.

This entire program does not resolve itself into a "competitive battle" to determine which girl or boy can improve the most. In fact, camps using PFI tests avoid competition whenever possible, even in sports activities. In discussing PFI's particularly, the health counselor should explain that each camper has specific needs, limitations, and capabilities. Consequently, each seeks to attain an ideal goal for himself.

An important step in vitalizing the health program is the preparation of charts or "line-graphs" kept up to date as each succeeding test is completed. Charts, like that with this article, enable the camper to visualize the progress he or she is making week by week. They give a picture of the camper's change in physical fitness that may be watched as the season progresses. The chart serves another

purpose, too. It affords the director a means of determining how his program, the weather, the counselors, the meals, and other elements are affecting campers' health. When any specific individual or group begins to show unsatisfactory progress he can, and promptly, call into conference those most definitely concerned.*

The attitude of parents is invaluable in this procedure. A word of recognition or praise to the boy or girl who is removing a growth handicap, or improving a PFI score, will do much to enhance the child's efforts and render the results more lasting. Sympathy and understanding of the child's specific needs will help no end. If the child is overweight parents will be wise to "forget" to bring or send special treats of sweets, fruits, and the like.

Parents, above all, must remember — if results are to be lasting — that practices learned in camp must be continued in home and school during the remainder of the year. Camp directors are too often expected to correct the results of months and years of home training and school conditioning in from two weeks to eight weeks of summer life. A start can be made; but miracles are not commonplace.

It is impossible, in a limited space, to describe fully all the methods and procedures that will help in the development of individualized health programs for campers. Frequently, case studies are valuable for this purpose, since they also emphasize the amount or degree of success that can be expected. Four such cases are included here.

Case No. 1.

Age 15 years.
PFI's 76-79-88-102-116.

This boy was sent to camp by a social service organization. The mother had been hard pressed to keep the home together. The boy was considered to be definitely undernourished. He was generally very tired and pepless. He was below the average boy of his age in sport skills. As a result he felt decidedly inferior.

T—— was given a mid-morning and a mid-afternoon lunch of crackers daily and was assigned to extra rest periods morning, afternoon and evening. At this time his weight was fourteen pounds below the normal range for his age and weight. As a result of extra meals and rest, plus an activity program that became quite intensive during the third week of his stay, he gained twelve pounds. However, more important than the gain in weight was the fact that he improved forty points in PFI. His color was much better, and he did not lack "pep" for any activity regardless of how strenuous it was. His skill ability in almost every sport improved nearly 100 per cent and his social adjustments improved likewise and proportionately.

Case No. 2.

Age 14 years 8 months.
PFI's 53-59-66-71-80.

This boy was sent to camp with notes from his family physician and his parents requesting that we try to reduce his weight of 179 pounds.

* This type of "chart of progress" should be used by every PFI user, especially for campers, pupils, or club members being re-tested as often as one or more times monthly.—(Editor).

The physician had been giving the boy thyroid extract for about two months with little effect.

The boy was placed at the "training" table during his stay at camp. His diet and food consumption were carefully watched but even then he did not lose weight. In fact, the total weight lost during the summer was but four pounds. The activity program given him was very strenuous. As a result it helped the boy increase his PFI, although slowly from 53 to 80. This increase is really very great, 51 per cent in fact. The habits and interest developed by this boy in correcting his poor condition went a long way toward helping him improve his condition during the winter. He returned the next summer. At that time his entering PFI was 99.

Case No. 3.

Age 12 years 4 months.
PFI's 101-98-102-111-122.

P—— was attending camp for the first time. In fact, it was also the first time he had ever been away from his parents. This particular year his parents were having their vacation while he was in camp. This vacation was taking them to California by way of Canada. He thought that he should be permitted to go with them. The boy, therefore, resented the fact that he could not go with them and also that he had to be at camp. The camp, he felt, was the one reason why he was not going with his parents. Consequently, he had a difficult time adjusting himself to camp life. First he became homesick, then resentful and indignant toward parents and camp.

In an effort to stimulate him he was shifted to another cabin as soon as it was discovered that his second PFI had declined to 98. This change did not seem to make him more happy. Just before the month was up he was again changed; this time to another group division. A rather quick change in attitude was the result of this second change. In the new group he felt as though (and was treated as such) he were an "old-timer" at camping. His scores rose rapidly from 98 to 102, then 111 and finally to 122. *When his adjustment to camp came so did improvement in his health.* It is needless to state how delighted the parents were with the physical, mental and moral changes in their boy.

Case No. 4.

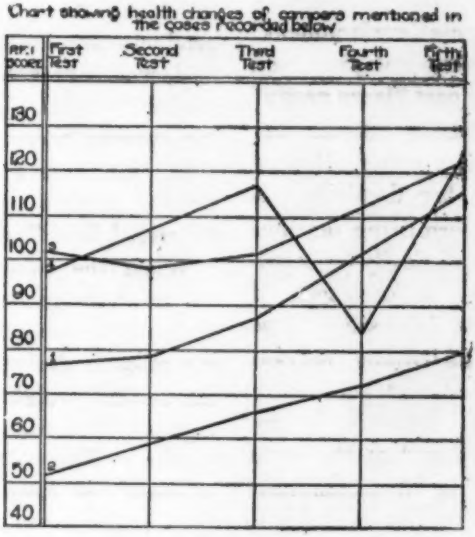
Age 13 years 11 months.
PFI's 98-107-117-84-123.

This boy was sent to camp by a charitable agency, due to the fact that his parents were in difficult financial circumstances. His progress during the season was very good until five days before the end of the sixth week. It seems that on Monday night of the sixth week he was acting as waiter for his table. While talking with other waiters he began to brag about how much lemonade he could hold.

The other waiters quickly gathered together the lemonade left in the pitchers at the various tables; and the boy set to drinking all he could. The next morning he reported to the hospital with acute abdominal pains. He had had fourteen cups of ice-cold lemonade! He was kept in the hospital for five days for observation and treatment. On the seventh day his PFI was only 84, which was 33 points lower than it had been on the previ-

ous test! This tremendous drop was due to the terrific reaction the lemonade and cold had on the boy's digestive system. The doctor diagnosed the case as one of gasto-colitis. The recovery after release from the hospital was slow, as evidence by the score on the seventh day. The boy's PFI when he left for home was 123 or 25 points higher than when he first arrived in camp. Thus, his recovery from the "drinking" bout was complete. This is shown by the high PFI. This case is given merely to show how, specifically, results may be measured, and that even "minor" lapses in camp program supervision may bring about harmful results.

We cannot close this report without expressing our appreciation to Drs. Edward Martin of Boston and Norman M. Weinrod of Mt. Vernon, New York, for their counsel, support and guidance in the conduct of the health program at Camps Osemaquin and Waubeeka and particularly for their work in following-up cases revealed by the testing done at camp.



THE COLLEGE WOMAN -- HER WAR, STRAINS, PEACE AND PHYSICAL FITNESS

IVALCLARE SPROW-HOWLAND

1.

IN the light of the present universal strife where strains between nations, countries, and principalities are causing mankind to stand shuddering and insecure before reality, the title of this article characterizes my interpretation of the challenge which is constantly and increasingly facing the college woman.

Without doubt, the first strains which present themselves to the entering college woman are her adjustments to the new mode of living, the acceptances of "mass environment" during eating, sleeping, playing, and even studying. Her past "large group" experiences were those outside her home and the regular relief afforded by daily return to her domicile was greatly helpful in permitting tensions to be more than sporadically released. In college, constant enforcement of stimulating interests intensifies these tensions. Soon the young entrant finds herself wearied and pressed in meeting them. She wants to be accepted by the group and at the same time find satisfaction in accomplishments required by her academic pursuits. To meet this desire she finds herself driven to "capacity efforts" and unless intelligent attention to proper adjustment is made, her nerves become overworked and her vitality is depleted.

At once, the problem of budgeting study time with leisure and recreation presents itself. Although this problem is greatest among freshmen women, it never, during the entire college period, ceases to be a major bugbear. The component of this budgeting problem is characterized by little recreation and physical activity at the expense of pent-up nervous energy. Then a break in the normal cycle and rhythm of body function begins to assert itself. The young college woman often goes from one extreme to the other. In a word, she abandons physical activity. The result is that muscles which were designed to work lie idle, and waste products accumulate just as unemptied waste baskets overflow in busy offices. The circulating and transporting systems become clogged and sluggish. There is a let-down in general vitality permitting onslaughts by unrestricted invading organisms.

When the balance between energy output through channels of normal muscular stimulation to energy consumption is disrupted and one end of the balance weighted to the disadvantage of the other end, sleeplessness results. The only true balance lies in sleep, yet sleep is dependent more upon muscular release of nervous tension than upon any other factor. But the college woman is a sleep procrastinator. She learns but slowly the necessity for a full quota of restful, undisturbed sleep-hours, and even against her best judgment fails to follow health practices with which she should comply humbly. Frequent rest and relaxation moments, where

release of nervous tensions are recognized, should become habitual protectives against the war-like strains of the college woman.

The riddle of increasing body weight — even with reduced diet — which constantly confronts the college woman is another strain of no small proportion. It leads her to drastic, unscientific dietary trials of weight reduction. She selects food unwisely and daringly neglects known rules of good nutrition. The underweight student is a victim of accompanying strong emotional disturbances such as concern for good grades and intensity in duty performance to fulfill all requirements. Co-existent with underweight is the rapid rate of body functioning which overworks the oxidization of glucose and in turn exerts additional pressure upon an overcharged energy field. It is quite probable that herein lies the nervous hypertension of the underweight young women. Reduction of the speed of body metabolism in all probability leads to lessened tension.

Now, both the hyper- and hypo-weight types are problems of physical fitness. Each type of defect exerts great stress upon the individual to meet the problems of energy capacity, fatigue control, and particularly satisfaction in appearance, charm, and poise. This latest problem is one of great concern to every college woman. She keenly realizes that her popularity depends largely on such apparently absurd conditions as body contours and figure, and beauty of face and complexion. For her normal and highly proper hopes are to be beautiful, to be loved, and to be happy.

Worry over financial pressures, working one's way through college, emotional maladjustments to the social order, inability to find satisfaction and enjoyment among her associates, disappointment in selection of courses, subjects, or professional choice, failure or unwillingness to make adjustments of personal likes, dislikes, and interests to roommates or classmates, and lack of good health practices—these are strains in the life of the college woman that reflect directly upon her mental, physical, spiritual, and social personality. By the same token, the reverse is true. Physical condition directly reflects the ability and degree to which and by which she can make adjustments and successes in her living. Happiness, through lack of strains, and good physical condition are inextricably intertwined.

2.

The next phase of this challenging problem brings us to the subject of how to insure everyday physical fitness and condition as a peace against warring strains. After several years of investigating measures of physical fitness, I have found that the PFI is most helpful for use in school and college departments of health and physical education.

As a corollary to the college medical examination, this PFI test for physical fitness through muscular strength offers additional means for detecting cases suffering from strains not discovered by medical examiners in search of pathological disturbances and physical defects. Moreover, the college medical examination is seldom given more than once or twice during the college period. This is univer-

sally recognized as highly inadequate for a constant survey of physical condition. For this reason regularly and frequently recurring tests of strength which indicate physical condition make it possible to conduct a health guidance program to recognize and treat any marked fluctuation of the individual's fitness to meet both temporary fluctuations and serious crises in health.

Just as each college woman rightfully expects to be measured in her scholastic and academic achievement so will she eventually expect to be measured in her progress and rate of capacity to do that work. The PFI significantly describes her rate of progress—her rises and falls in health—her physical capacity for work and play—even for attracting the elusive male! After several tests have been taken, it is possible to interpret the rhythm of capacity, which is being set up by each individual, as highly pertinent to an inventory of activities and experiences in college life.

Following medical and PFI tests a conference is held with each student to discuss results. *This is the most important phase of the entire health guidance program.* It is only through this conference that the teacher and the student may discover, *and arrive at an understanding of,* those strains which may be interfering with her physical fitness. The college woman feels a genuine interest in bringing her capacity up to par; and through the conference she receives constant stimulation in personal guidance to that end.

Every department of health and physical education for college women should endorse a program of personal health guidance, which should be in closest coöperation with the College Health Service. Students of low vitality should be referred to that Department for diagnosis and treatment. But, by the way, PFI tests are not given to those who have been restricted by the College Health Service. The first PFI test *follows* the medical examination at the beginning of the school year. Thus, those suffering from pathological or functional disturbances are not permitted to take the test. But others may be tested repeatedly. Obviously, too, those who are lowest in fitness need most oft-repeated tests—at least once monthly, and ideally during the middle week after menstruation.

In the women's department of health and physical education at Pennsylvania State College, capacity for physical activity based upon PFI serves as a foundation for selection of activities. If a student has a low index, she is required to take that class which *purposefully* meets the need for moderate activity, guidance in health habits and the reduction of strains. This class also is supervised to teach the basic utilitarian skills of standing, walking, and sitting. All of this lends itself positively to a program of guidance. Thus, the overweight and underweight cases, those "vitally" low due to any one of the number of strains mentioned in this article, or those unable to take more than moderate activity as prescribed by the College Health Service, receive individual attention through group treatment of an important phase of physical education common to all.

The title of this new special-

ized course is *Body Mechanics;* and its subject matter is not "corrective" or "restricted" physical education. It deals with the positive, scientific attitude, aiming toward body balance and alignment necessary for release of nervous tension, reduction of physical stresses in the body, and development of muscles that are hypotonic and weak, together with the release of muscles in constant hypertension.

In meeting strains which are sure to make their warlike inroads upon young women, every teacher engaged in health guidance should find satisfaction and joy in witnessing the fruits of her labors. She should note with satisfaction the increased interest in "good living" of those she challenges to study "resistances against strains"; she then knows she is sharing in building a world of women of finer physical powers; and she realizes that, above all, her part in the contribution toward a happier society is guiding young women to serve in the world as healthier future mothers, more capable of living fuller, richer, and more contented lives.

PRESENTING PHYSICAL EDUCATION PROGRAMS TO COMMUNITIES

Orren B. McKnight

THE people who pay the bills and the parents whose children are affected — for good or ill — by physical education programs in our schools have the right to know what their money buys and what happens to their children. During these times of economic stress, particularly, many demand to know. They learn very little from the children as a rule so it is left to the physical educator to enlighten the public. His method of doing so depends on his own resources and the desires of the community. Some communities demand demonstrations. Others may want to know "results" without stress and strain of a show. The physical educator must know how best to present his work.

Underlying all these must be a definite aim, a well-planned program, and a check on results. The aim may be health and the method play or dancing. Or it may be social efficiency, citizenship, culture — or merely skill in athletic events. The physical educator must, however, be able to answer the question "What proof have you that the children are healthier, or more courteous, coöperative, charitable?" Physical educators "know" the child will be healthier for engaging in play or dancing or gymnastics. But many thinking people are asking teachers or their own neighbors "How do *we* know. What *proof* is there."

Articles in local newspapers, school papers, pictures, and talks to groups will inform the public of the aims and the program of the physical education department. The activities, with the hoped-for values of each, can be described, and the large numbers participating can be shown. Health material and the desirable habits taught make good reading. For example, it

is pleasing to learn of a classroom in which "Every one is now up to normal weight since the milk campaign started." The fact that five of the children in the room are now twenty-five or more per cent overweight may not be mentioned, though. Consequently, such a report, though pleasant reading, will be misleading. Such tales have a way of returning whence they came. Moving pictures, posters, pageants, play days, field days, posture drives, health drives, safety drives, mass athletic drills, class exhibitions, parents week, etc. are important, too. All have a place when informing the public. They help to "sell" the physical education department. But physical education is, first of all, a health program. Is the health of the child really improved? Parents and taxpayers want to know.

The health of the child is improved if the child continues to show better posture at home as well as at school; if he uses his leisure time in play more often and in rushing to the movies after school and Saturdays less often; if he practices safety rules; if he practices good sportsmanship; if he shows better school attendance and academic improvement. These are what the public wants to know, and such results are being accomplished by many physical educators who should continue using all possible means of informing the community of their aims and methods. But these are popular "public goals." The real goal — our proper goal — is first of all the individual child, who has physical weaknesses to be corrected. This is the harder task; but in the end doing this job well will better prove to the public the purpose of the physical education department than any number of "demonstrations" or general reports.

I have found of greatest value in talks to Haverhill Rotary, Kiwanis, Parent-Teachers and other clubs, illustrated lectures on PFI results. For example, in Haverhill we have been able to *prove* that a goodly number of girls in the ninth grade who were low in physical fitness in September came up to normal by June and remained there during the next year because of the individual corrective program. We have also shown, by individual case reports, that children who were doing poor academic work had sight, hearing, physical fitness, foot, organic, or faulty health habits or some other defect. The implications are plain to all: remove these physical deficiencies and pupils will be better able to study, learn, work, play, serve themselves, their parents, their communities. For we consider it a privilege as well as a prime duty to send such children to proper sources for further examinations; and we delight in cooperating with medical authorities in corrective measures.

Present these cases to newspapers, parent-teacher and other groups. The public will then have a new conception of health education. Charts, graphs, and pictures will impress parents more than words alone. Parents learn by visual education as well as children. *But stress individual cases.* Of course, one must have such cases to present, which requires long and arduous testing, calculating, analyses of cards, conferences with pupils, parents, physicians, etc., follow-up activities! The alternative to these efforts is to deny the propriety of health

work — to rail at "therpeuties in education." But then one misses chances to save one's face if not one's job.

The case of a boy with a high IQ doing unsatisfactory academic work instantly intrigues parents and school authorities. But when his PFI test shows he has low physical fitness and then he is turned over to his family physician who finds a brain tumor developing the public is interested! (We had such a case in Haverhill.) The honor student who was so tired every afternoon he needed a nap before evening study arouses sympathy. But his PFI indicated low physical fitness, then proper exercise or changed diet, or even two or three naps a day; he was restored to normal strength in three months so he no longer needed naps and admitted "studying came easier." The physical education department then excited interest.

Unusual cases are not needed to create public interest. It was interesting to Haverhill parents to learn that the PFI median of a high honor group was 118, whereas the median for the rest of the class was 92. It intrigued the local Rotary Club to learn that 63 per cent of a group who gave up school during the summer months of their tenth grade were low in physical fitness. Mothers were fascinated by the dry statistics which revealed that girls low in physical fitness, underweight, and given rest periods instead of exercise, actually gained in both weight and health. Parents, particularly, are interested in individual cases. Present cases where school and medical authorities work together. PFI results with summaries of tests for sense, motor, organic, and other defects give the answer to "What proof have you that the children are healthier?"

It is not difficult to interest and enlighten the public when there is something definite to present, particularly when it relates to health. And if physical fitness is not a proper concern of physical educators, what is?— and who then should be concerned for physical fitness? This, we in Haverhill have found, is not only a logical and a necessary responsibility of our Health and Physical Education program—it is a veritable gold mine, too — yielding respect for our work, friendship for ourselves, increased teaching efficiency for our instructors and, best of all, more activity and happiness for pupils.

THE SIGNIFICANCE OF MUSCLE STRENGTH IN BODY MECHANICS

GEORGE GUY BAILEY, M. D.

THE director of physical education and the orthopedic surgeon meet on the common ground of body mechanics. This mutual interest is, indeed, indicated by the derivation of the word orthopedic from the Greek, meaning "straight child." It is unfortunate that up to the present time there has been so little actual coöperation between these two groups, since part of the duties of each is to spread the gospel of good body mechanics.

The orthopedic surgeon is perhaps most aware of the tremendous advantages of instructing the young in correct carriage of the body, for it is he who most frequently encounters the results of faulty body mechanics which come to light as the individual grows older. Many of the aches and pains of middle and later life can be definitely laid at the door of faulty posture. In an individual with poor posture the muscles are not doing their share of work in maintaining the upright position of the body. More burden is thrown on the ligaments, which become gradually stretched; and this chronic ligament strain results in pain and fatigue. The weight-bearing joints themselves, being thrown out of correct mechanical alignment, work at a disadvantage, and in time hypertrophic changes appear in the joints, producing more pain. As these later changes appear, it becomes increasingly difficult to correct the underlying faulty mechanics of the body, hence the importance of preventing these changes by correct instruction of the young.

In recent years there has been an awakening of interest in the physical education, or more specifically the physical development, of the child and of the young adult in schools and colleges. This is particularly apparent in certain European countries, where emphasis is being placed on the physical training of even very young children, with an eye to their future as soldiers. Regardless of the motive, increasing interest in the physical development of the nation's youth is worthy of cultivation.

As a result of defective education in his youth the average American adult today is apt to have distorted ideas of just what constitutes proper exercise for bodily development, and what he should do to "keep fit." He usually considers that the essential thing to do is to spend ten minutes a day swinging dumb-bells or trying to touch his toes with the tips of his fingers, and following this strenuous procedure he passes the remainder of the day slumped in an office chair in blissful disregard of his muscular apparatus. It is the duty of the director of physical education to prevent this misconception by teaching the doctrine of repeated muscular exercise throughout the day by the constant maintenance of correct body mechanics.

The significance of muscular

strength in good body mechanics is obvious. Without sufficient power in the muscles, proper carriage of the body cannot be maintained for any considerable length of time. The maintenance of correct posture demands continuous muscular exertion, which, in modern life must more and more be conscious exertion at first, but which later on, as muscles become stronger and more accustomed to their new task, is performed without conscious effort on the part of the subject. However, the very act of maintaining good posture is exercise for the muscles, so that once a good carriage is held throughout the day without conscious effort the subject may rightly assume that he is actually subjecting his muscles to continuous correct exercise.

Methods of instruction in good body mechanics will vary somewhat, depending on the age and type of the individual to be taught. In general it will consist of teaching him how to assume correct posture, and then persuading him consciously to assume this new attitude many times each day. Along with this, the subject should learn certain muscular exercises to be repeated several times a day, for the purpose of developing more power in those particular muscles which are chiefly concerned in the erect attitude. As progress is made in the development of strength in the specific muscle groups involved, and good posture can be held without effort for longer periods of time, these exercises may gradually be reduced.

There is one factor which must be kept constantly in mind by physical educationalists. *Individuals vary in their capacity for muscular exercise and development.* Thus, the middle-aged woman will not tolerate the rapid progress in body development that may be expected in the young athlete. However, age and sex are not the only considerations which should guide educators in assigning exercises to particular persons. Capacity for muscular development, and with it ability to acquire and maintain satisfactory body mechanics, depends, to a large extent, on the type of body which the individual has inherited from his ancestors. Individuals may be regarded as conforming to certain body types, which are determined largely by inheritance. The asthenic type of individual is predisposed to certain faults in muscular development, and with it difficulty in acquiring proper body mechanics. It depends also on the environment in which each person has been reared; and this environmental factor assumes more importance in older people. The term "muscular insufficiency" may be used to describe the state of affairs which exists in many individuals. This type of person will be muscularly *weak,* have poor muscular apparatus, consequently have faulty body mechanics; and he will be very apt to develop more serious symptoms from this combination as he grows older.

It is with this group of individuals who, being muscularly weak, and therefore deficient in capacity for muscular development, that we are apt to have difficulties with our attempts to exercise them and to obtain for them a state of good body mechanics. These people must be dealt with gently, because they are easily fatigued. Individual guidance is the keynote of success in their man-

agement. These are the subjects who most need the close coöperation of the physical educationalist and the physician.

This brings us to the relationship that should exist between the physical education director and the physician. The director of physical education, by his contact with large groups of young people, has the opportunity to recognize and to separate those individuals who are not fitted for group instruction and who require special handling. This special instruction may be carried out by the director, or he may feel that certain of these cases require actual medical supervision. Some of the cases of "muscular insufficiency" will fall into this category. A small but more obvious group requiring close coöperation between the physician and physical director includes students with actual physical defects, such as those of the musculo-skeletal system, or those resulting from cardiovascular malfunction or disease. With the present system of medical examination of students in schools and colleges these defects will usually be picked up before the students come under the supervision of the physical educationalist. Recommendations should be made by the physician in these cases concerning the type and amount of exercise to be given these individuals.

Since physical educators come into intimate contact with children from one to three times or more a week it is clear that the basic responsibility for instilling into the youth of this country a conception of proper body mechanics must be with them. Clearly this is a teaching job. It needs to be emphasized again, however, that in all doubtful cases the advice of the physician should be sought, in the interest of providing a safe and more complete educational treatment of the child.

EDUCATIONAL PRINCIPLES IN ADMINISTERING INTERCOLLEGIATE ATHLETICS

JOHN M. HARMON

EDUCATIONAL principles in administering competitive athletics may well be listed in two groups. First, those principles which provide a guide in coördinating the athletic program with the classroom program can most readily be applied. Second, and closely related to the first, may be outlined principles which indicate improved methods in making the athletic program itself contribute more to the wholesome education of the student. In this presentation the word education is intended to include the meaning of learning whether it be the acquiring of skills or the learning of more abstruse material.

The following can be considered no more than a sampling of the type of principles which should be in the minds of athletic administrators who are conscientiously trying to coördinate their program with the classroom program.

1. Scholarships, loans or gratuities from any source should not be contingent upon competition in athletics by the recipient.

This principle includes the essence of amateurism as it is understood everywhere. In practice it means that we assume athletes should not be discriminated against. Therefore, in all fairness if credit be given for leadership ability in athletics as a factor in determining those most worthy of scholarship help it follows that a scholarship once awarded to athletes may be one of the determining factors and should be continued until the individual graduates unless the need of academic standing of the individual is obviously and admittedly changed. Frequent rumors indicate that a few colleges secure a large group of freshmen athletes none of whom are given bills the first year, but thereafter all must pay except the few selected for varsity competition. This is professionalism and is not an educational method.

2. Scholarships, loans and gratuities should be administered only by the educational administrator.

This principle means that aid should be given only through the regular college officials and not directly from alumni to the students. Neither should members of the athletic staff administer aid, if for no other reason than that where it is so administered it increases unsavory rumors and breeds poor inter-collegiate relationships.

3. Members of the athletic staff should discuss admission requirements or classroom grades of athletes with no one other than the boy involved.

In practice this means that the coach will not help bring pressure upon instructors for leniency in grading. No more than one percent of boys who need leniency will be an asset to the team. Intelligent boys will win many more games than dumb "athletes" if the coach will not be fooled by bulging muscles but instead concentrate upon teaching skills to the good student.

4. The conventional practice of declaring students ineligible for athletics because they are low in other school subjects should be discontinued.

This may read like heresy and therefore need more support than space will permit. New York State high schools have adopted it. Many colleges, including Amherst as a pioneer, have accepted this principle. It is an educational principle because it is unhygienic both organically and mentally to discourage daily habits of vigorous exercise. It is not good practice to use the popularity of athletics in forcing study. Such study cannot lead to a worthwhile education. The studies and their teachers should carry their own weight. It is here assumed that students who are not making good in the classroom will be expelled. Competitive athletics should serve as the recreation program for the best athletes in school at the time of the contest. One should not be permitted to compete when his class is graduated.

5. A year of residence and successful classroom work should be required of all students before they are permitted to take part in athletics other than the intramural variety.

The following of this principle would cover the case of transfer students. It would also eliminate freshman competition upon the intercollegiate level. This principle is in operation in the Big Ten Conference. The orientation program of the freshman year is disturbed more by intercollegiate athletic competition than is the influence of varsity competition upon all upper-class programs. The original intention of the freshman rule loses its value where a freshman program is carried out.

6. Complete records of all negotiations with other schools and of individual and team performances should be kept on file for reference.

This precaution will prevent many misunderstandings between institutions. Interdepartmental relationships require a good record system because gymnasium credit, health supervision and class excuses for trips are often involved.

The second group of principles are indicative of methods which should directly or indirectly point the way toward a more effective education program in athletics.

1. Athletic scholarships are incongruous and should not be given.

The practice of paying a student for playing on a college team does something to him which isn't wholesome in effect. The average thinking student resents the attitudes developed by paid athletes. Potential student leaders have been robbed of the opportunity to lead by this student resentment of professionalism.

A dean in a southern university recently said: " . . . We offer scholarships in athletics, mathematics, music, English and so forth, and the remuneration in all is about the same. . . . "*

To those who believe valuable character education, mental hygiene and organic health education may be gained through athletic competition, the above statement may seem to describe a good practice. A conflicting view on the subject is here offered.

Although good wholesome educa-

* Proceedings—Twenty-First Annual Conference of the National Association of Deans and Advisers of Men. April, 1939.

tional values may be gained by students in athletic competition there is a conflict in ideology when the same activity becomes a means of a livelihood. An educational program becomes a vocation when the participants are given athletic scholarships. The difference seems to be in the difference between the arts upon the one hand and the sciences and languages upon the other. When the college is influenced to give boys athletic scholarships in an effort to increase gate receipts or increase publicity many involved problems influence the methods of administration in the direction of more commercialism and less education. When the athlete becomes a finished performer the process of improvement in skills or in other words the education process ends. Furthermore, when the skills involved are perfected the pleasure for the performer or "sport for sport's sake" is ended. In other words the play spirit is dependent upon the learning process. When this spirit is exhausted professional attitudes follow. Perfect performers are the rule where athletic scholarships are given.

It is true that perfect or near perfect performance may be as frequently expected of scholarship students in mathematics. However, there is a difference. In many sports perfection in performance is gained while still an undergraduate. It would seem that the value of the game is exhausted and should be at least temporarily forgotten while in arithmetic only a foundation is being laid for a lifetime of mental growth. Genetically, motor skills are of a lower or less difficult order than are abstruse materials. Almost all football players come to hate the game before they are twenty-five years old. Lovers of a science or language are just getting a start in the subject at that age. The spirit of amateurism is theoretically possible even where athletic scholarships are given but not to be expected.

2. No educational institution should employ an athlete and put him to work before he has registered and attended classes.

This principle is rather specific but is necessary because some colleges have used this procedure in recruiting athletes.

3. College coaches should not accept invitations to appear at banquets or other assemblies that are given in honor of high school and preparatory school athletes.

This practice may be innocent enough in itself. However, observation of the practice has proven it to be the beginning of many misunderstandings upon the part of boys as to the motives of the college representatives.

4. Colleges should not conduct high school athletic tournaments and meets for any purpose other than in rendering a service to the high schools.

Where high school facilities are not adequate for some programs college facilities and leadership might well be used, but these tournaments and meets should not be held as a method of recruiting students.

5. The provision of special tutors available exclusively to or primarily for athletes should not be the practice.

Good boys have been spoiled by the use of this method. Their objective of getting an education becomes only an objective of getting grades.

6. College coaches should not conduct "try out" practices for high school athletes.

This is a professional method and tends to give the student the impression that the college is in existence primarily for the purpose of developing winning teams.

7. Any college that has more candidates for a particular team than can be used frequently in a single schedule should arrange junior varsity and still other schedules when possible.

Competitive programs have been criticized because they include only a small percentage of the students. The coaches are usually teaching as many students as are other teachers, therefore, the way to provide the values of the program to greater numbers is to provide more coaches and more schedules.

8. Operating budgets for athletic programs should be administered in the same way that funds for all academic programs are administered.

In other words, if a program is a worthy part of an educational program it should be supported as are other parts. Gate receipts should go into the general funds as income to the university, not to the athletic association. Special endowment is less desirable for athletics than for other departments simply because of the present confusions about athletics.

9. Sports should be graded according to the difficulty of the skills involved and the number of seasons of competition for each boy in each sport limited through a carefully arranged point system.

This procedure is followed in all other units of curriculum material. There are just as many good reasons for doing the same in sports.

10. Sports should be graded according to the endurance required and the difficulty of the skills involved that the amount of daily practice needed in each sport may be determined.

Lack of a more scientific procedure is now resulting in a lot of wasted effort. Most teachers of skills are committed to the principle that practice makes perfect. However, when fatigue sets in further improvement in skills is replaced by the oldest habits and retardation takes place.

Where the above principles are being followed it will probably be noted that their results are dependent upon the integrity of the administrators in charge. Rules are not worth much. Most of them can be circumscribed by those who wish to do so. Men with convictions of what is right or wrong and who have a thorough knowledge of physical education, including competitive athletics, can make an athletic program a major asset in an educational program.

ATHLETICS AND SPORTMANSHIP: POLICIES AND TECHNIQUES

LEONARD W. CLARK

MILLIONS of people are actively engaged in some one or more sports, and millions of others participate as spectators. But how many of these people pay attention to sportsmanship, or even know what it means? Winning and losing seem to be all that matters. Yet, without sportsmanship, there would be no real sport of any kind.

Of course, any game won outside of the rules or by breaking the rules laid down for all participants may go into the records as a victory, but the winner under such circumstances knows the true answer. One often wonders at the effect upon hundreds of thousands of caddies who have to listen to all the alibis and explanations that take place on golf courses. Golf is a game that lends itself to alibis because your mistakes are your own, where no opponent can interfere. In baseball or tennis the hit ball may be traveling in too much of a hurry. In football you may be blocked out. But in golf the ball just sits there waiting to be hit. It is up to you to have control of yourself when you "swing at a little white ball." But what is good sportsmanship?

I believe in its essence good sportsmanship means fair play to opponents, and fair play means being honest, courteous, and just under all conditions. The first two of these qualities of good sportsmanship are well understood. But justice—which even classic philosophers found hard to define—is more difficult to understand. In sport, however, its meaning is clear: one should not take an "unfair advantage."

But what is an unfair advantage?

I would say that any physical or mental or athletic superiority over an opponent is an improper advantage — and therefore unfair. If any advantage is unfair then we might as well say opponents ought to be equal in strength, skill and intelligence. To this I would agree—and this is what I teach my pupils. Games are contests to be enjoyed—and even enjoyment depends on approximate equality.

But equality has more values than mere enjoyment to participants as will be shown hereafter.

The Doctrine of Equality

Equality is a prime condition of friendship, which is the basis of social life. From this premise the following conclusions are derived:

(a) A highly valuable concomitant of game and sports activity is training in social efficiency: coöperation, loyalty, sympathy, justice; and even initiative, courage and perseverance.

(b) But games between unequals cannot be truly games; they are miniature warfare.

(c) And unequal contests yield little pleasure or friendship to players or spectators.

(d) Therefore, an essential duty of physical educators in charge of sports is to secure approximate equality between opponents for all games and contests under their control.

(e) Strength tests are excellent practical measures for determining abilities of players in intramural sports, and athletes in interschool sports.

(f) Therefore, physical educators should use strength (or some other better) tests to equalize opposing teams.

Administrative Advantages

By equalizing the strength of opponents, emphasis on defeating them — humiliating each other — is lessened, because all players know their teams are evenly matched and that "the game" is the thing they are playing. Interest in the game increases when players meet on equal terms. Attendance of players is higher and more regular, because the struggle is keener and all have the same opportunity of winning. No prizes should be given. Consequently pupils play for the sheer joy they get out of the game.

Complaints and arguments are lessened by equalization, and boys can run their own games. Students should be trained to officiate.

Methods for Equalizing

There are various methods used in equating opponents, some going back almost to the beginning of time itself.

a. Age—weight—height, or combinations thereof.
b. Choosing up sides.
c. Selections by coaches, directors, or managers.
d. Major and minor leagues.
e. Handicaps by distance or time.
f. By grades (year in school).
g. Strength Index.

Of these, the most generally effective for schoolboy sports seems at present to be either the Strength Index or some other direct measure of strength. It should be definitely understood that the Strength Index is proposed as a measure of *general* athletic ability, and must not be conceived as measuring skill in any one particular sport.

Some Considerations

Our first consideration in the conduct of games or sports should be for the well-being of our individual boys and girls. Consider for a moment the psychological reactions of the boy who is the last one to be chosen on a team (in "choosing up sides"). Why is he chosen last? Because he is the boy who is the "dub." Have you ever been in this position? The hurt that often tears at this boy's heart is cruel. In a program of equalization this could never happen, this boy would be *placed* on a team, not *chosen,* and he would be playing with equals. They may all be dubs, but at least they are equals.

Health examinations before and during participation in strenuous activities should be considered by those who are prone to overlook this very important part of our athletic policy. Frequent PFI tests will reveal the physical condition of athletes and help to curb overloading the individual.

Equalization in Games and Sports at Melrose High School

For the past five years in Melrose we have been equalizing opponents in

various sports in our intramural program. Touch football, ring hockey, basketball, track and field, decathlon contests, softball, and starting this year, handball games are played.

In the decathlon conducted each winter and spring during the past four years, boys were divided into six different levels of ability using the Strength Indices from their PFI tests. Division I, 2400 or more SI points; Division II, 2100 to 2399; Division III, 1800 to 2099; Division IV, 1500 to 1799; Division V, 1200 to 1499; and Division VI under 1200 SI points. Thus, a weak boy was not required to oppose, or induced to try to surpass, a strong boy, *even on paper,* but participated in his own class and compared himself with boys of approximately his own strength.

The decathlon is a voluntary event in every way. A boy scores his own events, and no check is made of his honesty, for the absence of prizes makes cheating pointless.

Interest in the decathlon has always been very high because each boy compares himself with his equals and not merely with the one or few star athletes who surpass the average so far as to discourage most potential participants. For example, in our first decathlon conducted under "equalized conditions" we had over 4000 event-entries all voluntary—and no prizes, remember. Since the first year interest has more than doubled again! In 1937-38 we had 7340 and 1938-39 over 9000 event-entries recorded.

The Efficiency of SI Equalization Technique

The accuracy with which Strength Indices predict athletic success is well shown by results of decathlon tests. For example, the winner of the decathlon in 1939 in division I scored 1089 points; in division II, 904 points; division III, 867 points; division IV, 801 points; division V, 561 points and division VI, 504 points. The record holders in division I for the various events surpass in time or distance the record holders of division II, and so on down through all divisions with the exception of four events out of 120. (Two of these were free basketball throw events.) This is additional proof of the accuracy of using the SI as a predictive measure of athletic ability.

Results of equalizing touch football teams within a 300-point range are as follows:

26 teams—57 games played.

20 tie games—35 per cent of games tie.

5 won by two (2) points—43.8 per cent two points or tie.

12 by one touchdown—65 per cent one touchdown or less.

8 by two touchdowns—78 per cent two touchdowns or less.

12 by three touchdowns — 22 per cent were by three touchdowns.

Ring hockey results were likewise satisfactory:

Teams chosen within a 300-point range:

Division I—2400 points or over—4 teams.

Division II—2100 to 2399 points—4 teams.

Division III—1800 to 2099 points—4 teams.

Twelve teams played a total of 72 games, with each team playing six games in its own division.

Results:

Tie games, 25—35 per cent.

1 point difference in score, 18—25 per cent.

2 points, 23—32 per cent, 60 per cent.

3 points, 6—8 per cent.

Sixty per cent of the games were either tie scores or were won by one point.

Conclusions

The results of equalizing opponents have been highly satisfactory to all involved. Teams which lost by large scores during the first series of games won against the same opponents later. Knowing they had equal power they persevered and conquered. The boys have enjoyed their contests so much that very few have been cancelled because of failure of players to appear.

No one will question the importance of teaching good sportsmanship, justice, courage, courtesy, coöperation, loyalty and other social virtues in or through sports. Unfortunately, good objective tests are not at hand to determine whether or not these social or moral ends are served. But we do have the accepted theory of "equality between opposing teams" to guide us. That is, "the nearer each other are the abilities of opponents the fairer and more sporting will be the contest."

It works in practice. Certainly a large quota of labor is involved for the physical director. He must give PFI tests, calculate scores, teach boys to organize teams on the equalized basis—even teach them the ideals and techniques of good sportsmanship in practice as well as by words. But after all, isn't he paid to do just this?

EQUALIZING OPPONENTS BY MEANS OF THE STRENGTH INDEX

KENNETH B. DUBOIS

Methods

TO equalize opponents in both individual and team activities is to provide opportunities for the individual to obtain a fair degree of success in participation. Now, equal opportunity is a fundamental principle upon which education in the United States is based. Too often we find situations provided in physical activity in which equality is sadly lacking. Such situations hold little promise for the continuance of that activity, particularly on the part of individuals whose strength and skill are unequal to the occasion of the moment. Hence, for these individuals the activity ceases. On the other hand, had careful planning assured a modicum of success to each individual, the activity might have continued for all.

In 1932 we commenced a series of experiments in the City of Albany public schools, utilizing the Strength Index as the basis of classifying boys for physical activities in which they might expect some degree of success. The earlier experiments were in track and field activities, but later the classification plan was extended to basketball, ice skating, foot races, volley ball, soccer, kick ball, football, newcomb, baseball, and swimming.

The first problem facing us was to

find a suitable SI range that would care for the needs of the participants by properly placing them in their groups. After sampling the SI's of selected participants, we arbitrarily arrived at a 200-point SI range for the first experiment — a track meet! The results of this track meet were so significant that we decided to continue the plan and extend it to other units and to other activities. The 200-point range, however, is not necessarily fixed or rigid, but may be adjusted from time to time to meet the various school situations. Generally, though, a 200-point range is quite satisfactory.

In basketball we in Albany had a special problem in seven outlying schools, which enrolled only seventh and eighth grade boys, but not sufficient numbers to establish 200-point ranges for intramural league competition. Thus, a school may have only forty to fifty boys enrolled in these two grades. We equalize their teams by locating the mid-point of the SI of all the boys participating. For example, School No. 4 has a league of three teams of boys, all of whose SI's are 850 or below, and a league of three teams of boys whose SI's are above 850. School No. 16 has three teams with SI's below 925 and four teams in a league by themselves whose individual SI's are above 925. If a league of four teams is to be formed, first we take the four boys with the highest Strength Indices and place one on each team. We do likewise with the next four boys, and so on until all boys have been assigned. If a few of the boys are known to possess unusual playing skill, they are distributed equally among the four teams. Care is taken, however, not to unbalance the total SI's of the teams. By re-shifting a few cards we balance SI's so that *the total strengths of the teams are nearly equal.* Thus, in the end we diminish this problem of equalizing opponents in schools where insufficient numbers exist to establish several leagues with about a 200 SI point range. In the two large junior high schools we set up definite ranges of SI for opposing teams.

Results

Seventy-two teams played basketball in 1938 and only four of these teams were undefeated, while seventy teams won one or more games. As six teams won only one game, *sixty-four teams won two or more games.* This is in the direction at least of the educational ideal of winning and losing an equal number of games each year.

For the years 1936-37-38 we have records of 1,162 games of basketball in which SI averages of teams have been computed and reported. Now, we might expect that, *if we have narrowed the difference in average SI's sufficiently to the point where strength was no longer the dominant or determining factor in the outcome,* we should get a 50-50 distribution of the games won by teams with higher SI averages and those won by teams with lower SI averages. What has actually happened is that the teams with the higher SI average have won 55 per cent or 639 games while the teams with the lower SI average have won 45 per cent or 523 games. (These records are determined for each game; thus, a team might be rated as higher SI average today, but when they play next they may be rated the lower SI team because of substitutions.) Such

an outcome is educationally nearly ideal. It may be said, then, that equalization by SI's is successful in basketball in guiding individuals into situations in which they find it possible *to achieve some degree of success.* Certainly, these boys are experiencing both winning and losing, which is generally accepted as desirable. They also coöperate in carrying out the program by acting as officials, scorers, timers, and coaches, and do a very good job of it.

Adding other team games such as soccer, football, volley ball, baseball, kick ball, playground baseball and newcomb, we have a record of games won and lost by higher and lower SI averages of 1,940 contests. The higher SI teams won 1,032 or 53 per cent of the outside contests, while the lower SI average teams won 908 or 47 per cent of the contests. This outcome again seems significant. We have effectively equalized opponents, thus meeting the first criterion of fair play in sport: justice, or an equal chance for all.

In our two junior high schools we have also used the Strength Index as our basis for classification for intramural swimming competition. Here, of course, as in track and field, it is possible to record the time performances of individuals in the various strength-range classifications. Such records give a clear idea of how well the Strength Index plan performs the job.

Of course, there will be overlapping performances from one group to the next higher group. This is so in any field in which a classifying device is used. For instance, some sixth grade children will give better performances on a seventh grade arithmetic test than will some of the seventh grade children, and so on. Likewise, physical educators must not expect any classifying plan to function perfectly. For example, consider a running broad jump. In Albany we have charts of the performances of 145 boys who competed in a track meet in six SI divisions in this event on May 9, 1936. Division I included boys with the lowest SI's, Division VI boys with the highest Indices. Upon analysis there were found to be *some* boys in each next lower division who could perform better than *some* of the boys in the next higher division.

Now, let us observe the outcomes. The following table lists the median and winning performances for each group from the lowest to the highest SI division.

WINNING AND MEDIAN PERFORMANCES IN THE RUNNING BROAD JUMP, 1936

Div.	*Strength Index*	*Number Who Competed*	*Winner's Distance*	*Median Distance of All Participants*
1	Under 950	33	13 ft. 2 in.	10 ft. 10 in.
2	950-1149	33	14 ft. 1 in.	11 ft. 11.5 in.
3	1150-1349	33	16 ft. 1 in.	12 ft. 10.7 in.
4	1350-1549	21	16 ft. 1 in.	13 ft. 0.2 in.
5	1550-1749	14	16 ft. 6 in.	15 ft. 3 in.
6	1750 up	11	19 ft. 1½ in.	15 ft. 11.5 in.
	Total	145		

One can readily see from this chart that the median performance of each group increases with the higher SI's. Also, the winning performance is better with each higher group with the exception of Group 4, whose *winning* (but not median) performance was tied by Group 3. This chart indicates that the classifying plan had been successful despite the fact that there were some overlapping performances.

In our large schools the Strength Index plan of classifying competitors has been successful, and not only in equalizing opportunities for some degree of success in activities, it has also greatly increased participation and has eliminated largely administrative problems of organizing activities and leagues with each new seasonal sport. For example, the Annual Ice Skating Races of the Albany public schools recently took place and attracted a field of nearly 600 boys and girls, who signed up and participated according to Strength Index Divisions. The boys took part in eight and the girls in four Divisions. As participation on the part of the boys outnumbers that of the girls about 2 to 1, adjustments are readily made by offering the boys eight groups in which to compete and the girls four groups. (Of course, boys and girls *never* participate in the same event.) Again the flexibility of the Strength Index plan is indicated.

Suggestions for Beginners in the Use of the Strength Index

1. Arrange to give physical fitness tests once, or preferably twice, a year. (The Strength Index is derived from PFI tests.)

2. Use a 200-point range in SI for grouping. Ranges may vary slightly depending upon numbers of participants and time and space to accommodate them.

3. In small schools with insufficient numbers of pupils to establish definite SI ranges, distribute boys with the highest SI's on different teams, beginning with the four highest SI boys if four teams are to be made up. Then distribute the next highest SI boys, etc., until all teams are made up. If sufficient numbers exist to form two leagues, assign all boys over the middle SI point to one league and all boys below to another league, balancing total SI's of teams as suggested above.

4. Track and swimming teams may be formed within definite SI ranges; or, if insufficient numbers exist, teams may be made up of boys with wide ranges of strength. In this situation we might have five "SI classifications" within a single team's make-up, but the events should be arranged for each classification. For example, all five classifications might have, in a track meet, the 60-yard dash, broad jump, high jump, and a four-boy 220-yard relay. Each boy would represent his team in his own Division in, let us say, two of these events. Points scored in the events of the lowest SI division have just as much value as those scored in the highest division. Thus, team unity is retained. We do this regularly in Albany.

5. Expect overlapping individual performances. Median performances will be increasingly bettered as the SI range goes up.

6. When you are familiar with the Strength Index ranges which function best in your schools, definite regulations may be set up and entry blanks prepared for different activities. Pupils then enter their own names in the events scheduled for their classification. Thus, time is saved.

If physical educators are to provide wide programs of physical activities for large numbers of participants, success in the main, depends upon how well they equalize opponents. For, large numbers of participants will not continue under unequal, which are unfair, and therefore educationally undesirable, conditions. Some classification plan must be adopted which will ensure some degree of success for all. The Strength Index plan goes far toward this goal.

EQUALIZING OPPONENTS IN A TEACHER TRAINING SCHOOL

ISADORE YAVITS

PRACTICALLY all high school and college administrators and physical educators are convinced that in the gymnasium and athletic field, teams for intramural competition should be as nearly as possible even in every respect. To promote such divisions, several bases are used. For example, we see teams equalized in height. In other instances, weight is used as a basis for division of teams. Even age is used in some cases. And yet a little thought will soon convince one that none of these three—age, height, or weight—is very accurate as a *modus operandi* of distribution for equalizing teams.

At Ithaca College, the PFI and SI have been used for almost ten years as bases of division of boys into teams for intramural basketball competition. A little more time and effort is required for the machinery necessary, but the results amply repay the effort.

First, the PFI record cards of all players are arranged in order—highest SI on the top, lowest on the bottom. Next, the best players are "skimmed off the group" and appointed as captains. Then the cards of others are simply "dealt back and forth" into piles according to the number of teams. The totals are added, and where necessary, adjustments are made by shifting men with higher scores to other teams, in order to *even the SI's of teams.* Believe it or not, in nearly every case the score in games between teams divided into equal strength groups, no other consideration being taken into account, is very close, even going into overtime contests. It requires little experience of this type to sell to the educator the SI as a means of dividing teams.

This author conducts a class in minor games for freshmen. These games include relays and contests of low organization. The sixty boys are divided into four teams, according to height, and games are played twice weekly. These teams are named Wesleyan, Amherst, Colgate and Dartmouth. The instructor noticed that

the Dartmouth team won most of the competition. So, totalling up the SI scores, he discovered that the average SI and total SI of this team was the highest of the four. Does one need much more proof regarding the reliability of the use of the SI for dividing teams into even groups?

Twelve years ago, while director of physical education at Albany High School, Albany, New York, this author did extensive experimenting with the PFI's and SI's of the hundred boys who were candidates for the high school football team. The twenty-five with the highest scores were placed in the varsity group, the next twenty-five comprised the junior-varsity, and the other fifty were divided into four even intramural football teams. Our results proved that the SI is a dominating factor in the success of a football player.

When physical educators become genuinely interested in the use of the PFI they find themselves becoming more and more preoccupied with the educational side of their work and less and less worried over the athletic coaching phases of their teaching.

MUSCLES

Norman Bradley

THE most important function of the human body is motion; everything done depends upon it. This motion could not exist without the muscles. The contraction of muscular tissue is the only source of motion in the human body. By this contraction the skeleton of the body is moved and everything that a human being wills depends upon this motion. The great things that man has achieved or done through the ages could not have been accomplished without the muscles; for instance, the seven wonders of the world. Even the smaller every-day functions of our body, such as breathing, the beating of our heart, and the activities of our stomach, depend upon motion; consequently these functions are dependent upon muscles also.

With the development of muscles came the development of the mind. The mind derives its power from the body. In the early stages of life prehistoric man used chiefly his large muscles, and the work he did to hunt and procure food, at first, only used his large muscle groups and he needed very little skill. As he developed his finer muscle groups and obtained skill in the use of various implements with which mother nature had provided him, he cultivated his mind along with the development of these finer muscles. As his mind progressed he had new ideas and found new ways in which to do things more easily and without much muscular motion.

Today, in this modern era of machinery, and because of the invention of labor-saving devices, he has so greatly decreased this muscular motion by the use of his well-developed mind that it is no longer thought that the muscles are of such great importance to him in procuring food and sustaining life. However, this thought is inaccurate and shall be proven so.

By these things that have been noted

it can be readily seen that in the beginning (that is, in the life of prehistoric man) muscles were of paramount importance and developed long before the brain. As they became finer in development the brain also became more highly developed. This proves that the advancement of the mind or brain, therefore, was and still is greatly dependent upon the development of the muscles.

As the muscles were of paramount importance in pre-historic times, it is believed by much too great a percentage of the population (and many times very strongly believed) that the mind is of paramount importance today. Some believe that schools should teach nothing but subjects for the advancement of the mind. This is not logical. The ancient Greeks were far ahead of us today in this respect. The care of the body and the training of the muscles were then of equal importance to the cultivation of the mind. The Greeks attained a perfection of mind and body. These pagan worshippers truly had *"Mens sana in corpore sano."*

If, in times past, man needed muscular development to carry out the ideas of his undeveloped mind, it is surely true then that he needs even more muscular development to carry out the many more ideas of his greatly advanced modern mind of today.

The muscles are connected to everything a human being does, even to the working of his brain, and consequently they (the muscles) should be thought of as such. "The culture of muscles is brain building. They are in an intimate and peculiar sense, the organs of the will," says G. Stanley Hall. What they are willed to do, they do. It would be of little or no use to think of things to do and have the will to do them if it were not physically possible to carry out this idea or will.

The whole muscular system of the body is made up of three types of muscle tissue. They are: striated or cross-striped, non-striated or plain, and cardiac. Striated muscles are so called because of the distinct cross strips on each fiber. These are the large skeletal muscles of the human body and are "voluntary" because they are nearly always under the control of the will. Non-striated or smooth muscles are so named because they have no cross stripes. This type is found in the bladder, intestines, and other internal organs of the body. These muscles are strictly involuntary and cannot be moved at will. Cardiac muscles are found only in or about the heart; they are "involuntary" but are somewhat striated. Cardiac muscles make up the framework of the heart.

The abilities of the muscles that make it possible to cause motion are:

(1) Irritability, this is the power of receiving stimuli from nervous cells and responding to this stimuli.

(2) Contractility, which is the ability of muscle fiber to change its shape and become shorter and thicker. This contraction is the response to stimuli.

(3) Extensibility, meaning its property to be stretched or extended.

(4) Elasticity, or its readiness to return to its original size and form.

Health depends upon perfect functional activity, that is, correct action of the vital organs. These organs are surrounded by the muscular system and consequently the exercise and development of the muscles aids the ex-

ercise and development of the vital organs. Therefore, muscle building is health building. The stronger you make your outer muscles the more powerful will be the internal process on which your future and your life depend.

When a person is coming down with a cold or is stricken with a disease his health is impaired and he suddenly becomes weak physically. These statements have been proven by PFI tests and hand dynamometer tests. By this we can see the connection between the health and the muscular strength of a person. To be healthy, successful, and happy, one must be strong muscularly. To be energetic, sleep well, avoid indigestion, aches, pains, and to keep old age from catching up with you, it is necessary to be physically active, to keep the muscular system on edge and toned up at all times. Regardless of one's age his muscular system and health should be the most important thing in his life.

It is impossible for anyone to be strong unless he is "healthy," that is, unless his internal organs function well. But when muscles are developed the strength of the organs, glands and internal processes are built also. If we desire life's best and wish to be cheerful, and to have surplus energy to do both work and play; if we desire to be keen, alert, ambitious, enthusiastic and have the admiration of everyone, it is necessary to be strong — healthy — physically perfect — three ways of saying about the same thing, and also to have power of mind to back up our muscles.

The world may not rest upon the shoulders of Atlas, but it does rest upon the shoulders, and therefore upon the muscles or strength and health, of every person living in it today, regardless of color, race, or creed.

THE EVOLUTION OF PFI TESTS AND PROGRAMS

Frederick Rand Rogers

Part I

First Insights and Adaptations

THE superiority of coöperative over isolated or competitive endeavor is perhaps the greatest lesson which civilization offers to wayward man. No one could even guess with any degree of assurance how many men's ideas have gone, say, into the creation of a modern steamship. The tale must be in the hundreds of thousands at least. Fulton, for example, was only one of a myriad of inventors; and would it not be salutary for teachers of history and other social sciences to make this clear to high school pupils?

What follows is a brief history of PFI tests and programs. Proper reasons for sketching the story are several. One is to render the credit which is due some thirty-odd persons responsible for the present status of these tests of general physical fitness. Another is to strike what I hope will be a mortal blow at their designation as "Rogers tests." They were never so called by this writer, and for the best of reasons: a personal name for a test often militates against its use

by others. Besides, such a cognomen is intrinsically meaningless.

PFI tests are by no means perfect. They never will be. In fact, they have today the status of steamboats in Fulton's time. They are, to speak bluntly, relatively crude, and are capable of almost infinite improvement. *The essence of their present value lies in the truly great idea they embody: that strength is closely related to general health, and strength tests, therefore, are of consummate value in the assessment of physical fitness.*

This summary is not a defense of the PFI, which may safely be left in the hands of its friends. Evidence multiplies yearly indicating that the values of strength tests, properly given, with scores related to proper norms, and intelligently interpreted, are beyond our present powers to estimate. Our historical sketch then, will merely be a celebration of the contributions of the creators and users of "PFI tests and programs."

A rough chronological order is maintained in the account. In the nature of events it could not be exact. The first fourteen sections may be bracketed as reporting developments before 1931, the next ten sections between then and 1935, and the last ten or so between 1935 and 1940.

This account makes no pretense to inclusiveness. Perhaps certain apparently minor developments unwittingly omitted here will, in another decade, be discovered to be of paramount value.

Readers unfamiliar with the PFI will find a fairly illuminating exposition of its nature and uses in *School and Society* for October 29, 1939, entitled "The PFI, Complement and Analogue of the IQ."

1. Prehistorics: Originators of PFI Tests

The originators of PFI tests, like the originators of ships and engines, are unknown and unsung. Who was the first man to (1) throw out his chest before his lady-love and his chieftain; (2) and (3) squeeze a lemon dry before an audience with one convulsion of either fist, (4) lift a tree trunk in some religious rite by straightening his back, (5) jump over a stone or a brook in some monkey-shining game, (6) and (7) show his biceps and chin himself as many times as he had fingers and toes, probably with one long arm instead of two—ah, wilderness! Their names escape us, but we still perform these antics at home, at the beach, in the gymnasium, on apparatus or not, formally as well as casually, sometimes keeping records, always with concern for our own efficiency.

Thus, PFI tests, of which there are seven, are only formalized evolutions of arboreal stunts, but today using scaled and calibrated instruments, and referring scores to statistically standardized norms. Like all other educational and medical tests . . . The foot rule is the standardization of a Roman foot-length. The clinical thermometer is the scientific substitute for the hand laid on a feverish brow. An electrocardiograph is only a more accurate substitute for a finger pressed into the wrist. The X-ray plate is but a better substitute for the ear laid against the chest.

2. Medievals: Crude Instruments, Norms, and Utilization in Diagnosis.

There must have been "breath machines" in Aristotle's time—attempts at measurement of lung capacity in numerical terms. The origin of the spirometer is buried in antiquity; but such instruments have been used by physicians for hundreds of years. In 1846 a Dr. Hutchinson wrote a treatise on the use of spirometers to detect and diagnose disease. Medical literature describing their uses is voluminous; and every year new research reports are printed which reveal the value of lung capacity tests as measurers of some phase of physical fitness. So significant have observant physicians found the spirometer to be that scores from its use are generally dubbed by medical and physical educational researchers "measures of *vital* capacity!"

Likewise, the originator of the hand dynamometer or "manuometer" to measure grip strength accurately is unknown, at least to this writer. Quetelet records its use over a hundred years ago—in 1835. Unfortunately, he fell into the same error as that made by many more modern psychologists, who have been content to use sex-age norms for strength, when weight norms would have been at least twice as revealing, and sex-weight-age norms perhaps thrice as valuable. Consequently, the significance of grip tests escaped him and them.

Nevertheless, grip tests have always been recognized as valuable. Physicians today judge patients' progress partly by the strength of their handclasps, while "losing one's grip" has passed into the category of proverb. Lifting standard weights, running certain distances, jumping high, far, or repeatedly, and "chinning the bar" have been used for centuries by men desiring to gauge the state of health or the general fitness of patients, slaves, servants, subordinates, or employees.

The following comment in a book printed in 1851 (Hugh Miller, *First Impressions of England and Its People"*) will be revelatory to any judicious reader. It really ought, too, to suggest something of importance to military authorities. Observed Miller:

"As tested by the *dynamometer,* the average strength of the full-grown Scot exceeds that of the full-grown Englishman by about one-twentieth, — to be sure, no very great difference, but quite enough, in a prolonged contest, hand to hand, and man to man, with equal skill and courage on both sides, decidedly to turn the scale. The result of the conflict at Bannockburn, where, according to Barbour, steel rung upon armour in hot, close fight for hours, and at Otterburn where, according to Froissart, the English fought with the most obstinate bravery, may have a good deal hinged on this purely physical difference."

3. Dudley Allen Sargent: Originator of the Strength Test Battery.

If any single man deserves credit for PFI tests, it is Dr. Dudley Allen Sargent, M.D., of Harvard University and the School which bears his name, now a College of Boston University. For three decades at least, beginning in the 1880's, Dr. Sargent labored to develop and use dynamometers and other apparatus to measure the form and powers of the human body. His innovations were so numerous and of such value that they reveal his work to be that of a minor

genius. Dr. Sargent received gold medals at World's Fairs for his exhibits.

The most enduring of Sargent's works was the "Harvard Strength Test." It included the present PFI battery, with certain other tests, particularly one of lung strength, measured by pressure exerted by violently blowing through a tube connected with a pressure gauge.

But Sargent never got 'round to the development of proper norms. Moreover, the concepts of individual differences and individualization of instruction had not yet become popular in education: physical educators, as well as other teachers, still treated pupils largely as though they had not only been born politically equal, but were physically alike as well — and remained so, at least potentially. . . . Besides, Sargent used his test battery to select men for exclusion from athletics at Harvard, which made it unpopular with coaches. Unfortunately, too, many men at Harvard trained merely to achieve "record scores" in the Test and have their names emblazoned on a shield hung in the old Hemenway gymnasium. Modern users of PFI tests inveigh against these procedures as not only poor social form, but also destructive of health. Then, too, tests were arduous for physical directors to conduct. Moreover, in the hands of many users tests were carelessly given—an impropriety modern users sometimes repeat. Today, methods of testing have been greatly improved; for example, by modern methods of leg-lifting, scores have been more than doubled for the strongest subjects.

Finally, the tests were ridiculed by certain educational theorists in the 1920's who, the more greatly to glorify the social values of sports activities, neglected and sometimes even denied interest in the health values of physical activity. "From the standpoint of education, physical education should not be interested in health at all," insisted one standard text in *Principles of Physical Education.* Consequently, Sargent's tests fell into disuse about 1910, and then, after 1920, into temporary disgrace. But not for long.

4. George Connors: Insight-Strength, a Prime Requisite of Athletic Ability.

In 1911 the writer "took the Harvard Strength Test" at the Phillips Exeter Academy as part of the routine examination for all new pupils at that great boys' school. The boy who preceded me was a muscular fellow who, in test after test, achieved scores far beyond those being made by the rest of us. The tester was George Connors, at that time trainer for Academy athletes, and later trainer at Yale University. At last he remarked to this youth, "Jove, you are powerful! *You ought to be out for football.* Get a suit and report."

So my friend reported; but no coach took notice of him. With dozens of others he merely "played around." So, after two weeks of comparative idleness, he joined me in tennis, bowling, apparatus gymnastics and long hikes over the New Hampshire hills. Naturally, we agreed that the football coach had missed a bet—a conclusion which his later behavior was to prove. For Coach X, struggling to put together a winning team, even

used 125-pound boys whose only virtue was courage. *"He's missing perhaps fifty bets like you,"* I would say to my pal; for obviously football required strong bodies before all else and to achieve all else. Otherwise, why the grass drills and training table? "Hadn't George Connors said as much?" my muscular friend and I asked each other.

5. F. R. R.: The Modified Strength Test; Modified Scoring: Norms.

The George Connors lesson sank in. Therefore, when the writer became a physical director-coach in 1920, his first official act was to order a set of testing instruments; and his first teaching function was to give strength tests in the cluttered basement of the old Salinas (California) High School. I wanted to find the best *athletes.* It appears that our opponents thought we did.

Later, the battery was used to determine scores for segregating boys into squads of equal athletic abilities—so I could teach skills and strategy better, and so boys could enjoy their games more. Both objectives were achieved. Incidentally, these testing and equalizing features seemed not only to improve boys' playing abilities but also to give them increasing regard for honesty, courtesy, justice, and coöperation in athletics. In a word or two, they learned team-play better—and good sportsmanship.

Consequently a dissertation was undertaken at Columbia University to establish the validity of strength tests "as measures of general athletic ability," to standardize a modified battery of tests, to develop a better scoring system, and to provide norms to give tests more meaning and broader utility.

These ends were not achieved without a certain amount of ridicule being heaped on the project, illustrating once more the truth that, as civilizations grow more complex, simple and obvious truths become more and more suspect and are at last held up to ridicule.

6. George Drayton Strayer: The Physical Fitness Index.

While the writer was at work on a scoring system for strength tests it occurred to his advisers that some relation should be maintained between the magnitudes of scores for various tests and the sizes of muscles tested. This suggested that the final score might be a measure of muscular efficiency, and that, if divided by a norm for the individual's sex, weight, and age, the resulting quotient would become an *index* of his or her *general* physical condition.

After considering these ideas for some time they were presented to George D. Strayer, the writer's major professor at Columbia University. Unhesitatingly Dr. Strayer advised me to concentrate on the physical fitness, or general health, phase of my research. *"This is almost infinitely more important than your measure of athletic ability to equalize teams,"* he urged. His advice was not taken immediately. . . .

But the PFI—"a measure of general physical fitness, or capacity for physical activity and endurance"—was developed, including a method for deriving physical norms for all combinations of sex, weight, and age.

7. Carl G. Chamberlain: First Practical User of the SI and PFI.

The first institution to use seriously the Strength Index and Physical Fitness Index was the Charlotte High School in Rochester, New York. Securing the approval and aid of Herman J. Norton, Rochester's Director of Health Education, Carl G. Chamberlain first experimented to check the reliability of tests. His coefficients approximated those reported by the writer. (These are about .97 to .98 for experienced testers.) He then gave preliminary PFI tests and checked results with school physicians. When the three pupils lowest in PFI and declared to be "apparently normal" by physicians were, on medical laboratory tests, later discovered to have serious internal drains, and were then immediately hospitalized, Chamberlain went ahead with the re-direction of his physical program, based on PFI test results. This work of Chamberlain's was also the first independent validation of the PFI as a measure of general physical condition. (See also Section 16.)

8. Chancey R. Mann: Girls' Pushup and Pullup Tests.

Soon other city directors of physical education adopted PFI tests and re-directed programs. Among these, Chancey R. Mann, Director of Physical Education in Troy, New York, demanded tests and norms for girls as well as boys. For, since most girls cannot "chin the bar" or pushup on parallel bars, the boys' battery would not properly measure their arm strength.

"If you will devise tests for girls we will prepare norms," we told Mr. Mann. He did. The first tests ignored the position of the feet (toes or heels should rest on the floor, *not* flat of feet). The height of rings was set at four feet. (Present procedure is "approximately the height of the lower point of the sternum.")

It should be noted here that these girls' tests are relatively difficult to administer reliably. But a much more reliable substitute suggested — of a single pull or push on a bar attached to a dynamometer — is unacceptable, for it eliminates the repetition of performance so necessary to tests of endurance.

Repeated research by several independent workers has established beyond question the great values of arm strength measured by present test methods. Therefore, no radical change in testing procedures should be accepted until its superior validity *as a measure of endurance and general physical fitness* is established.

9. Everett T. Grout: Improved Testing Techniques and Apparatus.

During 1927-30 a number of physical directors in New York State experimented with various improvements in testing procedure. Among these, Everett T. Grout, Supervisor of Physical Education in Schenectady, made several improvements in testing back and leg strength, in lengthening the crossbar, and in changing the kinds of hook, chain, and base. Mr. Grout has estimated that he gave 50,000 back and leg tests personally in his efforts to standardize procedures in the seven junior high schools of Schenectady. Mr. Grout's improvements are embodied in present

dynamometers and in the testing manual "Physical Capacity Tests," (A. S. Barnes and Co., New York).

10. James J. Carter: Corrective Programs for Health Improvement, Et Cetera.

The first relatively small high school fairly completely to redirect its physical education programs in accordance with PFI findings was that at Lynbrook, New York, where James J. Carter, the physical director, concentrated his interests and energies during the academic school day on raising the PFI's of "pupils below 100." Two, and later other classrooms were transformed into corrective rooms and each "low PFI pupil" had two periods weekly of corrective exercises or rest, two of general physical activity—the normal program of calisthenics, games, dancing, special skill tests, etc.,—and one of instruction in hygiene. Other pupils in grades ten to twelve engaged in physical education activities after regular school hours. These adjustments approximate the ideal program for physically normal pupils in these grades and offer nearly ideal corrective and developmental facilities for physically subnormal pupils.

Mr. Carter is responsible for many other original adaptations of PFI tests and programs, among which the comparisons of test results for individual pupils *from test to test,* in order to analyze the effects of menstruation on the fitness of girls, and the correlation of his findings and advice concerning individual pupils with those of the school nurse and family physicians, are especially notable.

Part II.

PFI Developments Largely Effected Since 1930.

11. Bessie M. Park and Francis J. Moench: The Application of PFI Tests and Programs to Small Schools.

Miss Park and Mr. Moench at the Cortland Normal School (New York) first conceived and carried out plans to extend "PFI services" to schools having no physical educators. The plan, since followed by other teacher-training schools preparing physical educators for field work, is for senior and graduate students, under the supervision of college instructors, to (1) give tests, (2) advise principals and other teachers concerning the use of results, and (3) return to conduct retests periodically. These procedures have been found to be effective in placing candidates for future positions and in creating positions where none grew before. They have been developed since, and first at Ithaca College and Boston University, and with most conspicuous success lately at Syracuse University.

12. Lawrence J. Hill, Isadore Yavitts, and Kenneth B. DuBois: The Reorganization of Intramural Sports-Equality Between Opponents.

The three men named above raised intramural sports to almost an ideal level of efficiency as developers of good sportsmanship, and of skill and interest in play. Using the Strength Index as a basis of classification, individuals — both boys and girls, in separate events, of course — participate on six SI levels. Thus, if a 50-

yard dash is run, there are six races for boys and six for girls, with no more than 200 SI points of strength or ability separating contestants within any single race. In practically no case does a first-place winner in any category achieve or approach the time or distance of a third-place winner in the next higher category. Moreover, nearly 95 per cent of the participants during any one season at some time experience the satisfaction of "winning," while practically all "lose" often. Teams are equalized in strength in all sports, and most team contests end in virtual ties, particularly if season records are compared. This, of course, approaches the ideal. ("A tie score is an ideal score in any friendly contest.") No prizes of any kind are ever given, not even ribbons. Educators will recognize the high virtue of such conditions.

By these means, participation in intramural sports in Albany public schools has been made so popular that participants have multiplied nearly six fold in number. Other schools following the same procedure have been as successful; but the Albany directors, the first two of whom are now at Ithaca College, were pioneers. They established the practical propriety of a 200-point range in SI for any athletic ability group, the elimination of prizes, the elimination of "team standings," the excusing of pupils from academic classes for participation in these "equalized" events.

13. First Use in Other Research.

The first use of PFI tests in other research is that by Dr. ..... who sought to determine the relative values of apparatus gymnastics and certain other physical activities in improving pupils' physical powers. This is considered a significant event in the development and use of PFI tests. For their use as measures of the effects of activity or other corrective treatment on the physical fitness of pupils may become one of the two or three prime values of the PFI.

14. W. W. H. Mustaine: Development of Administrative Objectives and Policies.

As Supervisor of Physical Education in the New York State Education Department, Mr. W. W. H. Mustaine was responsible for the adaptation of practice to the developing principle that activity programs meet pupils' individual needs, and particularly their physical needs as revealed by PFI tests, and to the principle that opposing teams and individuals in games and sports should be approximately equal in "initial ability." His signal contributions may be found in many articles, but particularly in the form and content of the most recent New York State Syllabi in Physical Education.

15. Edgar W. Everts: Application to a State Program as a Means to "Save" Physical Education.

Edgar W. Everts, formerly State Director of Physical and Health Education in Minnesota, now Professor of Education at Boston University, was the first physical educator to use PFI tests and programs as a means to strengthen local and state support for physical education. He was also the first State Director to embrace the entire PFI program for his own State. This was done in spite of considerable criticism from his associates

in other States. A steadily increasing number of local and state directors have, however, since followed similar tactics.

16. Dean F. Smilie and Carl G. Chamberlain: Validation of the PFI by Correlation with Medical Ratings.

Dr. Dean Smilie, Director of Health Services at Cornell University, and Mr. Chamberlain were the first investigators to compare medical ratings of health with PFI's. The correlation coefficient of .60 they achieved is considerably higher than is usually found between these two types of health rating; and probably because Dr. Smilie was unusually painstaking in analyzing the results of excellent University medical examination reports. The usual coefficient is nearer .30. For PFI's and medical ratings of health *seem* to measure very different qualities, the physician looking for defects which *may* affect *future* life, while the PFI measures *present actual capacities.*

17. James A. Wylie: The Application of PFI Tests to Summer Camp Problems.

The use of PFI tests to measure the health progress of summer campers first occurred to James A. Wylie, Assistant Professor of Education in Boston University. He discovered that many boys not only do improve but, more significantly, that *many decline in health during summer camp activities.* He also proved that there is no statistical relation between change in weight and change in physical fitness, that homesickness is one of the most devitalizing illnesses of campers, and that overnight and other activities should be adapted to individual camper physical fitness. In seven years Mr. Wylie has made nearly forty improvements in his camp's program to improve campers' health—all suggested and checked by PFI test results. His article in the *Camping* Magazine for October, 1939, should be studied by every camp director who cares for the health benefits of camp to campers. These improvements so greatly increase health results to campers that it may properly be asserted "to fail to use 'PFI programs' in camp is to be culpably negligent in camp management."

18. John Baden Malcolm: Repeated PFI Tests at Short Intervals.

Mr. Malcolm, now Executive Secretary of the Hyde Park (Boston) Y.M.C.A., and lecturer at Boston University, first conceived the notion that PFI tests at such short intervals as every two weeks would aid camp directors better to adapt camp programs to individual needs. His first experiments and reports were eminently successful and have led to similar practices elsewhere, and particularly in many other camps, Y.M.C.A.'s and schools. Mr. Malcolm was also the first researcher to demonstrate significant relations between change in PFI and change in social and mental behavior.

19. Hiram A. Jones: Incorporation of PFI Tests in State Syllabi.

Dr. Jones, State Director of Health and Physical Education in New York since 1931, was the first State Director to incorporate PFI tests and programs in printed syllabi as integral

features of a statewide physical education program. The consequence has been the extension of PFI tests throughout the Empire State, and the stimulation of numerous experiments and other research using these tests.

20. Edward Godfrey: Introduction to Private School Physical Education.

Mr. Godfrey of the Hawken School of Cleveland, Ohio, has, for the last six years, used PFI tests in the school in which he is physical educator. His applications and results are of special value because of the youth of his pupils. Mr. Godfrey tests pupils six to fifteen years of age.

21. Ivalclare Sprow-Howland: Measurement of Effects of Menstruation.

Mrs. Howland, Assistant Professor of Physical Education in the Pennsylvania State College, on the suggestion of J. J. Carter, first investigated formally the effects of menstruation on college women, using PFI tests. Her results indicate that the weakest period is immediately—from one to two days — before menstruation begins, and suggests the importance of further research in this field.

22. F. R. R.: The Use of Grip Tests to Measure Changes in Health.

In 1934 the writer apparently, and by the merest chance, discovered that grip strength fluctuates significantly with small changes in systemic health. This initial study suggested others, until today one physician is gathering evidence for a book on the use of grip tests in medical practice, a physical educator is doing likewise for a Ph.D. thesis on the use of grip strength in physical education, while others are doing similarly on the use of grip strength in athletic coaching. The typical diurnal grip strength curve has been established—it closely parallels similar curves for mental efficiency and organic efficiency already established by psychologists and physicians. The effects of alcohol, sugar, honey, tobacco, drugs, various diseases, loss of sleep, muscular fatigue, various sports, etc. have been cursorially checked. Simple grip strength tests appear to have many and very valuable uses, for psychologists as well as physicians, for academic as well as for physical education teachers, and certainly for laymen.

23. Robert E. Laveaga: Administrative Combination of Medical and PFI Tests and Follow-up Services.

Mr. Laveaga, Director of Physical Education in the Huntington Avenue, Boston, Y.M.C.A., first joined medical and PFI tests as one continuous procedure, in testing Northeastern University freshmen. This led to the creation of a "physical testing suite" as a separate unit of the Y.M.C.A. plant.

Today new members of the Boston Y.M.C.A. and those belonging to the Hyde Park Branch are given thorough physical examinations by medical men, sensory tests by special testers, and PFI tests by physical educators— all sequentially — immediately after which they are advised concerning activities by specialists who have before them the results of all tests. This is scientific and individualized health service of the highest order, entailing the closely coördinated efforts

of physician, physical educator, and subject. It may be followed with considerable social profit by any personnel organization, and with definite financial profit by industry.

24. Leonard W. Clark: An Admirable Physical Education Program.

In 1938 this writer prepared and printed a pamphlet celebrating Mr. Clark's work in the Melrose, Massachusetts, High School. For this was the first school to incorporate practically all the major "PFI programs" --that is, three regular sets of tests annually for all pupils, classification of pupils according to individual health needs, extra classes for low-fitness pupils, reduced activity for high-fitness pupils, corrective activities based on individual needs, frequent re-tests of low-fitness pupils, the use of PFI results as aids in medical diagnoses, visits to parents, equality between opponents in intramural sports, PFI checkups of athletes in interschool sports, analyses of physical education programs by comparisons of results from year to year, elimination of special awards for athletic victories or PFI improvements, active concern for high-fitness pupils as well as low, and for changes in PFI of pupils at all fitness levels, and in special research projects.

25. Armand A. Gamboa, M.D. and George M. Geiss, M.D.: Use of Grip Tests in Medical Practice.

Drs. Gamboa and Geiss, Boston physicians, were the first medical men seriously and purposefully to use grip tests in medical practice as aids to the discovery, prognosis, and treatment of disease. Their researches already indicate that the hand dynamometer is a helpful aid in medical practice and may well become an indispensable instrument in the armamentarium of physicians as well as physical educators, athletic coaches, and trainers.

26. Thomas H. Hines: Thoroughgoing Adaptation of School Programs to Individual Health Needs.

The physical, even muscular, basis of all learning seems first to have been fully realized and acted on by all school authorities in Brookline, Massachusetts. Approving and extending Mr. Hines' recommendations as Director of Physical Education, the School Committee, acting first in Hygiene Committee meeting and later as a full Board, the Superintendent, Head Masters, House Masters, Principals, Guidance Director, School Physician, Head Nurse, and Physical Directors all work *first* to improve pupils' health as measured by medical examinations and PFI tests. Academic programs are so secondary that the first assignment, in the high school, is for from one to five physical education classes weekly in addition to after-school games and sports, *depending on the pupil's individual health need.*

It was in Brookline, too, that principals, guidance directors, and housemasters first recognized that academic failures of low PFI pupils who had high IQ's are so greatly due to physical weaknesses that academic programs should be curtailed and physical programs—of exercise, rest, modified diet or medical or surgical treatment—should be extended.

Mr. Hines is largely responsible also for several modifications of PFI practice—the elimination of straining in tests, special privacy for girls' back and leg tests and PFI records, formal approval by school officials for his programs, contact with family physicians strictly through the school physician, required knowledge of each pupil's approximate PFI by his or her physical director, departmental seminars for practice and standardization of testing techniques, treatment of individual cases, and others.

27. Mrs. J. Verity Smith: First Application of PFI Programs to Girls' Camps.

For several years Mrs. Smith, Director of the Boston Campfire Girls' Camp, has successfully used PFI's as guides to the individualized treatment of girls in camp. It appears that mental or nervous disorders are more prevalent in girls' camps than in those for boys. These are often revealed by physical fitness tests, for mental illness seems to affect physical fitness almost as greatly as do physical ailments. Guidance work in Mrs. Smith's camp starts with analyses of medical and PFI cards.

28. Gordon J. Hathaway: A New Leg Lifting Technique.

As given before 1920 the leg lifting test in the Harvard Strength Battery Test was often a cursory affair, each subject making his own adjustments of feet, hands, chain, and bar. Since 1925 many improvements have been made; but none of these was completely satisfactory. Overweight boys and men, many girls and women, extremely long-legged individuals, and swimmers generally were not accurately tested in leg strength. The test was arduous to give; moreover, women were generally not strong enough to administer it properly.

Finally, Gordon Hathaway, then a sophomore at Boston University, now physical director in the Hayden Boys' Club of Boston, devised a new and simple technique using a heavy belt. His method eliminates all strains on testers, eliminates all scratching on subjects' thighs, practically eliminates all feeling of strain in the lifting effort itself, and results in leg lift scores from 10 to 100 per cent higher, proving beyond peradventure the superiority of his method.

This is probably the greatest improvement made in fifty years of strength testing — indeed, since Dr. Sargent's work ended. It probably increases the validity of the SI as a measure of general athletic ability by ten to fifteen per cent and of the PFI as a measure of general health and endurance by possibly fifteen per cent. (The new method is reported and illustrated in the October, 1938, *Research Quarterly.*)

29-31. Seymour Maskel, William J. Lynch, Robert E. Leveaga, and Rachel Kelley: New Norms.

Hathaway's improvement in leg-lifting technique necessitated new norms. The first norm charts were ten years old, and norms were regularly surpassed by the average New England pupil by nearly 17 per cent. The arduous duty of giving thousands of complete PFI tests to boys, girls, men and women, calculating medians and quartiles, fitting and smoothing curves, and joining and extending these, was done

by the four researchers named above. Their work resulted in four new norm charts (for boys, girls, men, and women, printed and lined in three colors on heavy paper, and sold practically at cost by the Boston University Bookstore).

32. Donald D. Dunn: Often-Repeated Tests of Public School Pupils.

Mr. Donald D. Dunn, Director of Physical Education in Andover, was the first physical educator regularly to re-test all pupils several times annually in order to make the most effective adaptations of programs to individual health needs, using line charts, individual conferences, and statistical analyses similar to those developed by Malcolm for summer camps. (Monthly re-tests of pupils with PFI's below 100 are necessary to thorough-going physical education programs.)

Mr. Dunn seems also to have been an innovator in the combination of medical, physical, sports and other records on a single card for more effective summer camp use.

33. H. Harrison Clarke: A Complete Record Form for Follow-up.

Professor Clarke, of Syracuse University, in 1939 prepared and printed a four-page folder to include complete records of low PFI pupils, including IQ's, academic status, medical defects, and re-examinations, PFI records, weight records, reports by school nurses and others, results of guidance, etc. With this folder goes a form for pupils to fill out concerning their health habits and includes nearly two hundred questions or items of information.

Perhaps more than any other single document do this folder and health-habit questionnaire reveal the progress made in physical educators' efforts to get at and eliminate "the cause of the cause of the cause" of physical weaknesses. (Syracuse University Bookstore).

34. Thomas H. Hines: After-School Physical Fitness Consultation Services.

Mr. Hines' latest innovation in Brookline is the establishment of after-school and Saturday "clinics" for pupils with medical or physical deficiencies. Selected parents are requested by letter to bring their children to these "clinics," where they are met first by a school nurse in uniform and may be seen later by a school physician, a physical educator, a specialist in corrective physical education, an administrator, or the school system's guidance director, or by all these school officials.

The outcomes of this new school service must be many. Parents and pupils become more healthfully conscious of the physical basis of life and learning, they are given specific health instruction, they are induced to secure more and better service from family physicians, and they come to regard their schools and particularly their physical educators, as offering public services of the greatest value. Family physicians acquire new insight into the meaning and value of school coöperation in keeping their patients well. The values to school officials personally may be imagined.

This is perhaps a proper place to take cognizance of and regret the phrase bandied by certain persons

who call PFI programs "therapeutic." Thus branded, these critics hope educators will ignore the entire movement to discover and meet pupils' individual physical needs in physical education at least through the use of PFI tests. This epithet "therapeutic" is now at least twelve years old. . . .

35. Ellis H. Champlin: Reports and Publicity.

The vital importance of keeping superintendents, school board members, and general public informed of PFI programs and results was first sensed and acted upon seriously by Ellis Champlin, Chief of the Physical Education Bureau in the New York State Education Department's Division of Health and Physical Education. At the time of this writing his office is preparing outlines for official reports and newspaper publicity which will best inform local parents and school officials of the nature and values of the new programs. Forms and sample press releases are being developed by plan, trial, analysis, and revision. Eventually, physical educators using the forms and principles now evolving under Mr. Champlin's guidance ought to be highly efficient in "public relations," and should secure increased approval and support for all proper phases of local physical education programs.

Undoubtedly the current school year will witness new and important developments in "PFI programs." Their authors should, as soon as their value has been validated, make these known to their colleagues. "PFI programs" are worthy of following today just because of past sharing and frankness in mutual criticisms and stimulation.

REVIEWS OF RECENT RECORDINGS

WILLIAM P. SEARS, JR.
NEW YORK UNIVERSITY

Three Famous Scenes from Wagner. Tristan und Isolda: Love Duet (Act II), Liebestod (Act III); Die Gotterdammerung: Brunhilde's Immolation (Act III). Kirsten Flagstad and Lauritz Melchior. San Francisco Opera Orchestra conducted by Edwin McArthur, RCA-Victor, Camden, New Jersey. Victor Masterpieces No. M-644. $10.00.

Victor continues its series of selections from the great music dramas with this album of excerpts from two of the most stupendous of the music dramas of Richard Wagner (1813-1883). Kirsten Flagstad and Lauritz Melchior are, perhaps, the greatest Wagnerian singers the world has yet heard and these recordings are, therefore, of great historic importance. The tender and glowing music from *Tristan* is undoubedtly among the most powerful music which the immortal Richard composed. The stirring *Immolation* scene which closes *Gotterdammerung* and the Ring Cycle is music for the Gods. This album is a "must" for music lovers and columns of commendatory criticism would be insufficient to recount the magnificence of this recording. Singers, orchestra, and recording are all perfect.

Album of Six English Folk Dances. The Folk Dance Octet, conducted by Arnold Foster. The Columbia Recording Corporation, Bridgeport, Conn. Columbia Masterworks No. M-394. $3.50.

The folk dance music of the English people is simple and beautiful. Cecil Sharp, until his death some years ago, collected a great deal of this music and made it available for music lovers. Arnold Foster, who arranged the music recorded for this album and conducted the Folk Dance Octet, is the logical successor to Cecil Sharp. Mr. Foster has made the arrangements of a great deal of the music of this type for the English Folk Dance and Song Society. The present album includes two Morris Dances — rhythmic dances stemming from Ancient Moorish and French forms — and four Country Dances — dances that originated in the ale-houses and cottages of the English countryside. The dances are well played and excellently recorded. This is a valuable album for any school library and many teachers of English will wish to use these discs in their classes.

Nutcracker Suite. Tchaikovsky. The Chicago Symphony Orchestra, conducted by Frederick Stock. The Columbia Recording Corporation, Bridgeport, Conn. Columbia Masterworks No. M-395. $5.00.

The *Nutcracker Suite* of Peter Ilich Tchaikovsky (1840-1893) remains one of the most familiar and best loved of all symphonic suites. The work was composed as part of a ballet, *The Nutcracker and the Mouse-King*, and it contains a miniature *Overture*, a *March*, five characteristic dances, and the *Waltz of the Flowers*. The work was composed in 1890-91 on the Dumas *pere* version of the E. T. A. Hoffman fairy tale. The present recording and Dr. Stock's interpretation are excellent and this initial release of the Chicago Orchestra under the Columbia banner is a most auspicious one. This is certainly a definitive edition of this standard work.

Faschingsschwank Aus Wien. Schumann. Timely Records, Inc., 128 West 23d St., New York. Timely Album No. 7-C. $5.00.

Robert Schumann (1810-1856) was a typical flower of the Romantic Movement. His music stands as the inspired work of a man of singular gifts. Schumann wrote music in almost every form but it is piano music that is his greatest monument. During one of the very few happy interludes of his tragic life he wrote this *Carneval Jest from Vienna*. Like all the piano music of this unfortunate man,

this composition combines a rich instrumental color with harmony, rhythm, and melody.

Timely, continuing its experiment, has recorded this composition with the pianist remaining anonymous. The recording is splendid and the piano tone is recorded faithfully. The pianist, too, is excellent whoever he or she may be. It is another Timely triumph. The last single face in the album contains four selections from the composer's Opus 99—*Bunte Blatter.*

Spanish and Mexican Folk Dances. Played by a Mexican Dance Orchestra under the direction of Manuel S. Acuna. The Decca Record Company, New York. Decca Album No. 28. $2.25.

This album will be of invaluable assistance to the teacher of geography and the social sciences. Here are the colorful folk dances of Spain and Mexico played in an authentic manner by a native orchestra. The dance and Spain are wellnigh synonymous and the popular folk dances of Spain and of the Latin American countries serve as a splendid introduction to the study of the culture of our southern neighbors.

Mexican Melodies. Played by Harry Horlick and his orchestra. The Decca Record Company, New York. Decca Album No. 27. $2.25.

Like the Decca album of folk dances of Spain and Mexico this album, devoted to great melodic music of Mexico, will find its place in the classroom. Some of the favorites included in this selection are *La Golondrina, La Paloma, Granada, Estrellita, Cielito Lindo* and *Cuatro Milpas.*

Russian and Hungarian Gypsy Music. Played by Harry Horlick and his orchestra. The Decca Record Company, New York. Decca Album No. 20. $2.25.

Between the 12th and the 14th centuries, the gypsies migrated to Europe. From whence they came and why they came is a mystery that scholars have never solved in a satisfactory manner. Gypsies have lived and wandered all over Europe and by 1480 they had crossed over into England. They brought with them their curious *mores* and their exotic music. The so-called Russian and Hungarian gypsy music is actually the native music of those countries with the gypsy style and manner of performance impressed upon it.

The present album represents a careful selection of gypsy tunes faultlessly played by Harry Horlick and his orchestra.

SINGLE DISCS

George Frederick Handel (1685-1759) was one of the greatest and most prolific composers of his day. The music of this master is invariably refreshing and delightful. The *Concerto No. 1, in B Flat Major, for Oboe and Orchestra* has been released by Victor (12605; $1.50). The soloist is Leon Goosens, one of the world's most accomplished players of the oboe. Eugene Goosens, the brother of Leon, conducts the London Philharmonic Orchestra in this telling work for oboe and orchestra.

Columbia has just released a brilliant rendition of the Introduction to Act III of Wagner's *Tannhauser.* Felix Weingartner, the eminent European conductor, leads the *Orchestra de la Societe des Concerts du Conservatoire, Paris,* in this fine recording (69793-D; $1.50).

The magnificent music which preceded the third act of Richard Wagner's *Tristan und Isolda* has been recorded by Felix Weingartner, conducting the *Orchestre de la Societe des Concerts du Conservatoire, Paris* (Columbia 69805-D; $1.50). There is an excellent balance of the orchestra in this recording and a most beautiful solo by the English horn.

Pietro Mascagni (1863-) is best known for his popular opera *Cavalleria Rusticana.* This gory tale of peasant life was composed in 1890. One year later, Mascagni gave the world his *L'Amico Fritz.* Although this second work is seldom given in America, it contains some lovely music. Tito Schipa and Mafalda Favero, assisted by the orchestra of La Scala, Milan have recorded the delightful *Duet of the Cherries* from Act II of this opera (Victor 15837; $2.00).

The Negro Spirituals constitute a major portion of the rich treasury of American folk music. Deep pathos, genial good humor, and an abiding faith in the goodness of God are mingled with rich and interesting harmonic effects in this fascinating folk music. The Hall Johnson Choir, one of the greatest of all Negro Choral groups, interprets this music with a sincerity and depth that has called forth highest commendation. Led by Hall Johnson, this ensemble has recorded *Joshua Fit de Battle of Jericho, Walk Together Chillun*, and *Bye and Bye* for Victor (4460; $1.00). This is a record to add to any library of the spirituals.

A number of very interesting discs are featured on the current list of Royale releases (1780 Broadway, New York City). A fine interpretation by the pianist Alfred Mirovitch of Franz Liszt's *Die Lorelei* may be had on Royale 1837. This, of course, is the well-known Liszt setting of the Heinrich Heine poem about the maid on the banks of the Rhine who causes the wreck of the passing boatman's craft. Johan Halvorsen's *Passacaglia on a Theme by Handel* is one of the greatest works of this Norwegian composer. In its first recording Eddy Brown, violinist, and Milton Katims, violist, have given this work a magnificent reading (Royale 1840). Pablo Sarasate's Spanish dances are both colorful and virile. His *Navarra for two Violins and Orchestra* has been recorded for Royale (disc 582) by Eddy Brown and Roman Totenberg assisted by a string orchestra. Here is a sparkling Spanish dance full of bright and gay passages adequately interpreted by these two competent violinists. Also in the Spanish idiom is the *Serenade Humoristique (A L'Espagnole)* by H. Leonard. Eddy Brown, Micha Mischakoff, and Benno Rabinoff, violinists, assisted by Jascha Zayde, at the piano, are the recording artists (Royale 583). The Mozart *Variations: Come Un' Agnello* is not a well-known work and yet it is delightful and typically Mozartian. Alfred Mirovitch, pianist, records this work on Royale 584.

The two-piano team of Clifford Herzer and Jascha Zayde is fast becoming one of the country's greatest duo pianist units. With superb technique this capable pair gives a brilliant performance of the Carmen music in the recording of the Abram Chasin *Carmen Fantasy* (Royale 585).

DEPARTMENT OF BOOK REVIEWS

Fundamentals of Physical Education. By *George D. Deaver*, M.D., B.P.E. W. B. Saunders Co., Philadelphia. 1939. 299 pages. $2.75.

Dr. Deaver has contributed an excellent and greatly needed manual for the guidance of physical educators and public health and school nurses in recognizing the varying health needs of individuals. The organization of the content depicts clearly the author's practical and extensive experience in the administration of physical examinations and in the training of physical education teachers and nurses to recognize the early symptoms and signs of abnormal functioning of the body.

The presentation of the material is direct and includes well-defined explanations of the essential elements involved in a comprehensive survey of the individual's physical condition. It is apparent that a studious effort has been made throughout the text to avoid extensive and highly technical discussions which might be confusing to health workers other than physicians. However, the content is sufficiently detailed so as to give the reader a clear understanding of the precise techniques which the physician uses in making a diagnosis and in recommending treatment.

It is generally recognized that educators need to function more prominently in the health service program than has been true in the past. This is imperative

if more effective recognition of variations in physical condition are to be made and, even more important relatively, if adequate provision is to be made for meeting the educational needs of pupils whose physical condition deviates from normal. Indeed, educators should function on both sides of the medical expert. On one hand, they have the responsibility of referring pupils who deviate from normal to the physician for diagnosis and recommendations as to treatment. This may be either on the basis of competent tests of function or through observation. On the other hand, educators should be expected to coöperate in the follow-up treatment by making proper changes in educational programs as recommended by physicians. Dr. Deaver, both in the preface and in the first chapter, has drawn a sharp distinction between the responsibilities of the physician and those of the physical educator, nurses and other educators. The text is addressed expressly to educators in an effort to help them discharge more efficiently their responsibilities in the total program for meeting the individual health needs of pupils.

The first three chapters are concerned mainly with condensed but pointed discussions of pre-examination considerations, the taking of medical histories and the various techniques used in making the physical examination. In the chapters which follow, the student is led to observe, step by step, the actual methods of examining the various systems, organs and parts of the body to determine whether or not some deviation from normal is present.

An important feature of the chapters concerned with the examination of specific functions and parts of the body, is a brief review of the anatomy and physiology of the various systems and organs. In this connection, the author is to be congratulated on the omission of a considerable amount of extraneous detail which is so common in a work of this kind. The illustrations relating to examination procedures and contrasts between normal and abnormal conditions as well as the plates pertaining to anatomy and physiological functions show careful selection.

Since the muscles are the instruments through which practically all learning takes place, Deaver happily begins his discussion of examination procedures with a consideration of body types and the muscles. It is of interest to note that he calls attention to the use of tests of muscular strength as a fundamental factor in determining the health status of the individual.

Because of the profound educational implications of visual and auditory defects, school administrators, supervisors and teachers of physical education will derive particular benefits from a study of chapters XV and XVI. Also, a careful reading of the chapters devoted to such health factors as posture, orthopedic defects of the spine and extremities, the significance of height and weight relationships, the deviation from normal of the head, neck, nose, mouth and throat will be of particular interest to teachers, physical educators and nurses.

School administrators, school physicians and supervisors of physical education and nurses will find this text an excellent one to use in the training of teachers in service. The extensive experience of the author in training students and the practical exercises he has arranged at the end of each chapter makes the text especially adaptable for use in teacher-training institutions.

Supervisors and teachers of health and physical education who are now engaged in the development of programs in which the meeting of individual health needs is one of their prime considerations, should welcome Dr. Deaver's contribution. — EDGAR W. EVERTS, Associate Professor of Education, Boston University School of Education.